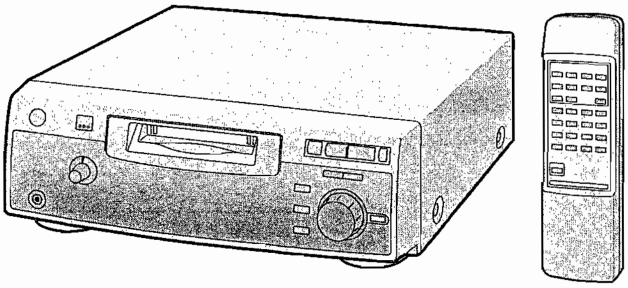
V21052

SHARP SERVICE MANUAL

No. S4822MDR1HMK2



MD-R1HMK2

- In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified should be used.

- **Note for users in UK**
  Recording and playback of any material may require consent which SHARP is unable to give. Please refer particularly to the provisions of Copyright Act 1956, the Dramatic and Musical Performers Protection Act 1956, the Performers Protection Acts 1963 and 1972 and to any subsequent statutory enactments and orders.

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SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

SAFETY PRECATION FOR SERVICE MANUAL

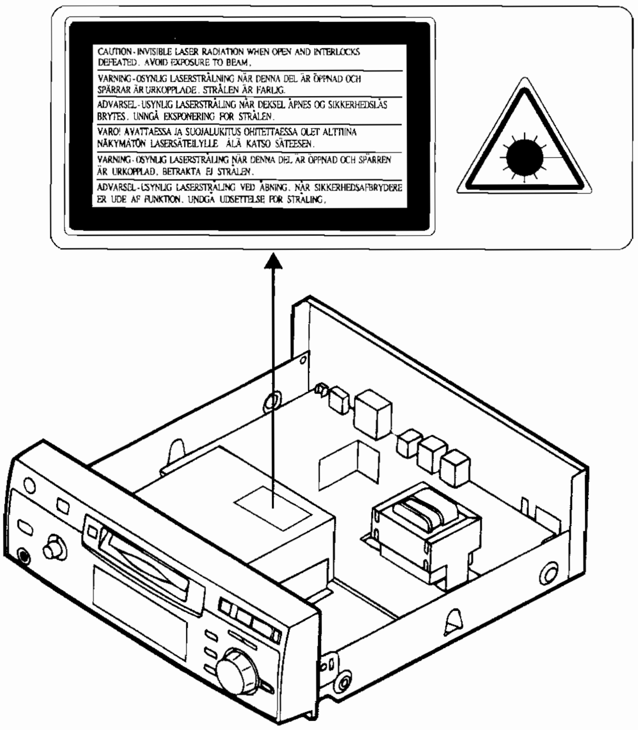
WARNINGS

The ael (ACCESSIBLE EMMISSION LEVEL) of the laser power output is less than class 1 but the laser component is capable

of emitting radiation exceeding the limit for class 1. Therefore it is important that the following precautions are observer during

servicing to protect your eyes against exposure to the laser beam.

(1) When the unit case cover is removed and LOADING SW (SW 1956) is turned on and then PLAY SW (SW 1954 mechanism PWB) is turn on in a few second.
The laser will light for several second to detect a disk.
(2) The laser power output of the pickup unit and replacement service parts are all factory pre-set before shipment.
Do not attempt to re-adjust the laser pick-up unit during replacement or servicing.
(3) Under no circumstances stare into the pickup lens at any time.
(4) If laser optical unit becomes faulty, replace the complete laser optical unit.
(5) CAUTION-USE of controls or adjustments, or pereformance of procedures other than those specified herein may result in hazardous radiation exposure.



CAUTION - INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.

VARNING - OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRRAR ÄR URKOPPLADE. STRÅLEN ÄR FARLIG.

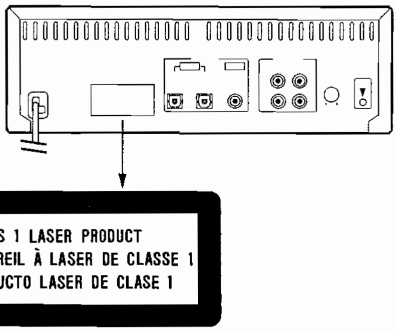
ADVARSEL - USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.

VARO! AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTÖN LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEN.

VARNING - OSYNLIG LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

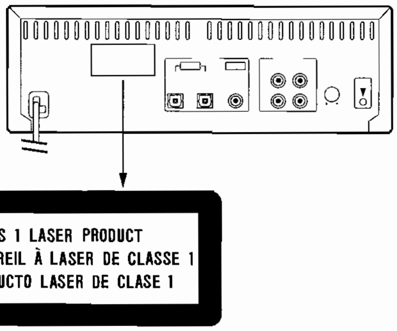
ADVARSEL - USYNLIG LASERSTRÅLING VED ÅBNING. NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSETTELSE FOR STRÅLING.

(For UK)



CLASS 1 LASER PRODUCT
APPAREIL À LASER DE CLASSE 1
PRODUCTO LASER DE CLASE 1

(Except for UK)



CLASS 1 LASER PRODUCT
APPAREIL À LASER DE CLASSE 1
PRODUCTO LASER DE CLASE 1

LASER KLASSE 1
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

LASER TŘÍDY 1

LASER TRIEDY 1

Laser Diode Properties

Material:	GaAlAs	
Wavelength:	785 nm	
Pulse time:	Read mode:	0.8 mW Continuous
	Write mode:	max 10 mW 0.5 S min cycle 1.5 S Repetition

VARO!	Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
VARNING!	Osynlig laserstralning när denna del är öppnad och spärren är urkopplad. Betrakta ej strälen.

Precaution to be taken when replacing and servicing the laser pickup.
The following precations must be observed during servicing to protect your eyesagainst exposure to the laser.

Warning of possible eye damage when repairing:
If the AC power plug is connected when the inner cover of the unit is removed, the laser will light up during focus access (adout 1 second) (Fig. 3-1).
During this operation, the laser will leak from the opening between the magnetic head and cartridge holder (Fig. 3-2).
In order to protect your eyes, you must not look at the laser during repair.
Before repairing, be sure to disconnect the AC power plug.

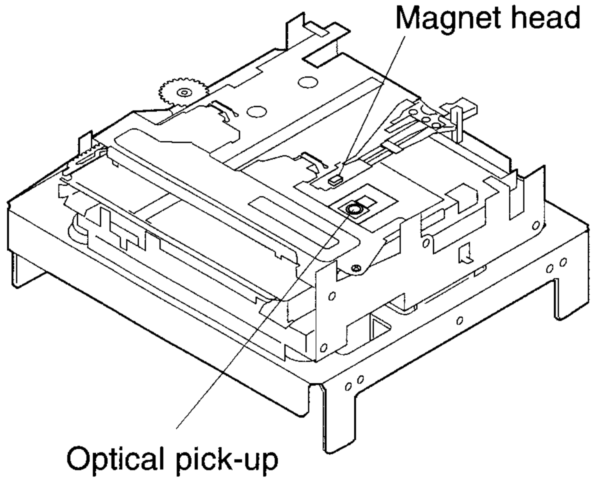

Magnet head
Optical pick-up

Figure 2-1

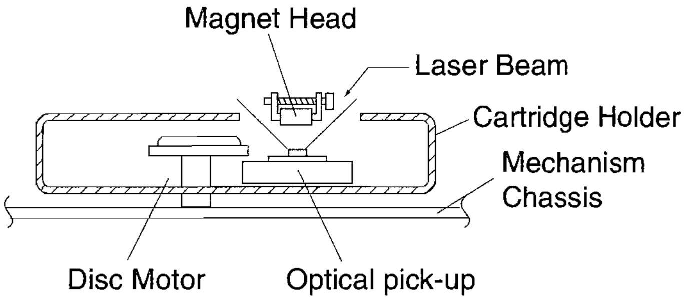
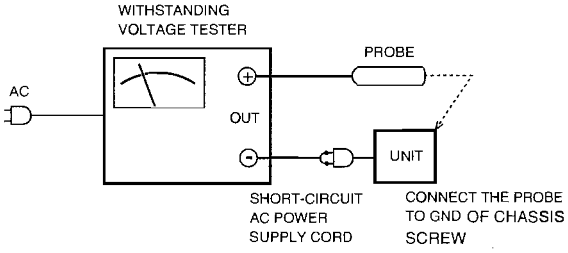

Magnet Head
Laser Beam
Cartridge Holder
Mechanism Chassis
Disc Motor
Optical pick-up

Figure 2-2

IMPORTANT SERVICE NOTES (FOR UK ONLY)

Before returning the unit to the customer after completion of a repair or adjustment it is necessary for the following withstand voltage test to be applied to ensure the unit is safe for the customer to use.
Setting of Withstanding Voltage Tester and set.

Set name	set value
Withstanding Voltage Tester	
Test voltage	4,240 VPEAK 3,000 VRMS
Set time	6 secs
Set current(Cutoff current)	4 mA
Unit	
Judgment	
OK: The “GOOD” lamp lights. NG: The “NG” lamp lights and the buzzor sounds.	


WITHSTANDING VOLTAGE TESTER
AC
PROBE
OUT
UNIT
SHORT-CIRCUIT AC POWER SUPPLY CORD
CONNECT THE PROBE TO GND OF CHASSIS SCREW

FOR A COMPLETE DESCRIPTION OF THE OPERATION OF THIS UNIT, PLEASE REFER TO THE OPERATION MANUAL.

SPECIFICATIONS

● General

Type: MiniDisc deck
Signle readout: Non-contact, 3-bean semi-conductor laser pick-up
Audio channels: Stereo 2 channels/monaural (long-play mode) 1 channel
Frequency response: 4 - 20,000 Hz (+0/-1 dB)
Rotation speed: Approximately 400 to 900 rpm
Error correction: ACIRC (Advanced Cross Interleave Reed-Solomon Code)
Coding: ATRAC (Adaptive TRansform Acoustic Coding)
Recording method: Magnetic modulation overwrite method

Input sockets

Socket name	Socket shape	Input impedance	Reference input level	Minimum input level
LINE IN	Pin socket	Over 22 kohms	680 mVrms	170 mVrms
OPTICAL IN (Optical)	Square optical connector	———	———	———
COAXIAL (Coaxial)	Pin socket	75 ohms	500 mVp-p	———

● Timer/clock

Type: Digital clock with date function
Timer: ON/OFF, once a day

A/D, D/A converter: 1-bit
Sampling frequency: 44.1kHz
Wow and flutter: Unmeasurable (less than ±0.001% W.peek)
Signal/noise ratio: 100 dB or better during playback (line output)
Power source: AC 230 V, 50 Hz
Power consumption: 17 W
Dimensions: Width: 270 mm (10-11/16")
Height: 93 mm (3-11/16")
Depth: 311 mm (12-1/4")
Weight: 3.1 kg (6.9 lbs)

Output sockets

Socket name	Socket shape	Output level	Load impedance
PHONES (Headphones)	3.5 mm (1/8") stereo socket	15 mV	32 ohms
LINE OUT	Pin socket	2 Vrms	50 kohms
OPTICAL OUT (Optical)	Square optical connector	———	———

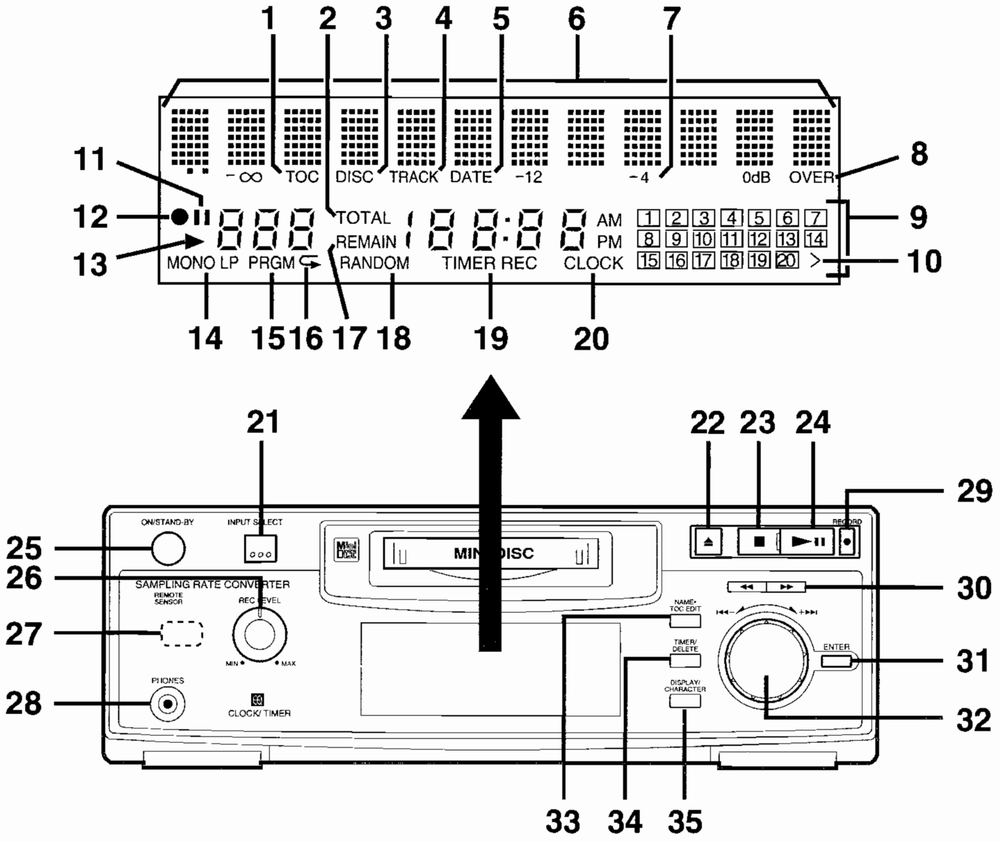
● Remote control

Power: DC 3V ("AA" (UM/SUM-3, R6, HP-7 or similar) battery included x 2)

Specifications for this model are subject to change without prior notice.

NAME OF PARTS

■ Front panel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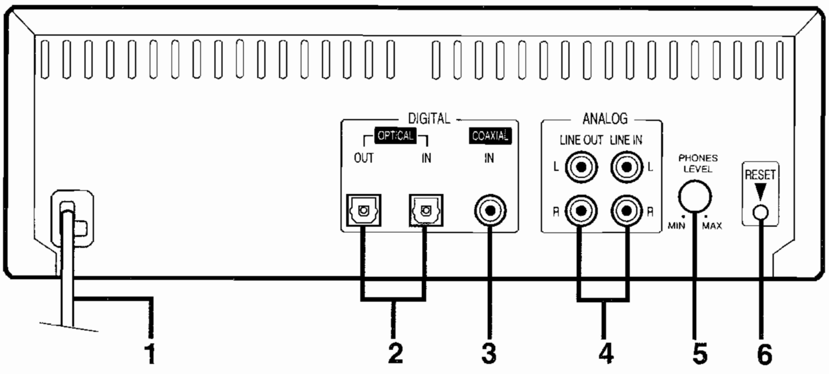
TOC
DISC
TRACK
DATE
-12
-4
0dB
OVER
TOTAL
REMAIN
AM
PM
MONO LP
PRGM
RANDOM
TIMER REC
CLOCK
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
ON/STAND-BY
INPUT SELECT
SAMPLING RATE CONVERTER
REMOTE SENSOR
REC LEVEL
MIN
MAX
PHONES
CLOCK/ TIMER
MINI DISC
RECORD
NAME• TOC EDIT
TIMER/ DELETE
DISPLAY/ CHARACTER
ENTER

1. TOC Indicator: TOC
2. Total Time Indicator
3. Disc Name Indicator
4. Track Name Indicator
5. Date Indicator
6. Level Meter/Character Information Display
7. Recording Level Indicator
8. Recording Level Too High Indicator
9. Music Calender
10. More Tracks Indicator
11. Pause Indicator: ❚❚
12. Record Indicator: ●
13. Play Indicator: ▶
14. Monaural Long-Play Mode Indicator
15. Program Indicator
16. Repeat Indicator: ⟲
17. Remaining Time Indicator
18. Random Play Indivator
19. Timer Playback/Timer recording Indicator
20. Clock Indicator
21. Input Select Button
22. Eject Button: ▲
23. Stop Button: ■
24. Play/Pause Button: ▶❚❚
25. On/Stand-by Button
26. Record Level Control
27. Remote Sensor
28. Headphone Socket
29. Record Button: ●
30. Cue/Review Button: ◀◀/▶▶
31. Enter Button
32. Jog Dial (Next/Previous)
33. Name • TOC Edit Button
34. Timer/Delete Button
35. Display/Character Button

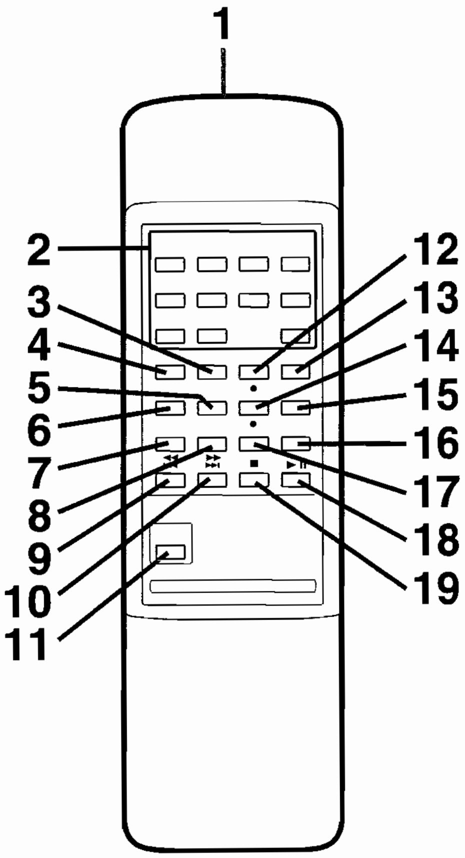
■ Rear panel

1. AC Power Lead
2. Optical Input/Output Sockets (Digital)
3. Coaxial Input Socket (Digiral)
4. Line Input/Output Sockets (Analogue)
5. Headphones level control
6. Reset Button


DIGITAL
OPTICAL
OUT
IN
COAXIAL
IN
ANALOG
LINE OUT
LINE IN
L
R
PHONES LEVEL
MIN
MAX
RESET
1
2
3
4
5
6

■ Names of controls

1. **Remote Control Transmitter Window**
2. **Direct Key Buttons**
3. **Play Mode Button**
4. **Music Scan Button**
5. **Input Select Button**
6. **Display Button**
7. **Time Button**
8. **Auto Mark Button**
9. **Track Down/Review Button: |◀◀/◀◀**
10. **Track Up/Cue Button: ▶▶|/▶▶**
11. **On/Stand-by Button**
12. **Program Button**
13. **Clear Button**
14. **Synchro Record Button: ●**
15. **Record Cancel Button**
16. **Record Mode Button**
17. **Record Button: ●**
18. **Play/Pause Button: ▶ ❚❚**
19. **Stop Button: ■**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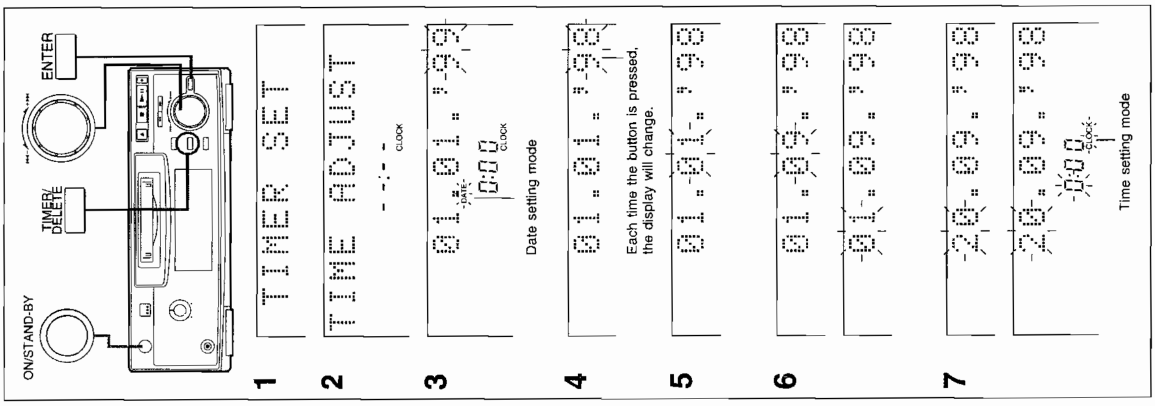
OPERATION MANUAL

SETTING THE CLOCK


ON/STAND-BY
TIMER/
DELETE
ENTER
1
TIMER SET
2
TIME ADJUST
- -:- -
CLOCK
3
01.01.'99
DATE
0:00
CLOCK
4
01.01.'98
5
01.01.'98
6
01.09.'98
01.09.'98
7
20.09.'98
20.09.'98
0:00
CLOCK

Date setting mode

Each time the button is pressed, the display will change.

Time setting mode

When recording, the date and time are recorded on the Minidisc, provided they have been set (page 15).

■ Setting the date

1 Press the ON/STAND-BY button to turn the power on and press the TIMER/DELETE button.

2 Within 10 seconds, turn the jog dial until "TIME ADJUST" appears.

3 Within 10 seconds, press the ENTER button.

- The unit will enter the date setting mode.

4 Set the "year" using the jog dial.

- When you turn the jog dial one step, the year will change up or down by one.
- The year 2000 or later is set as follows:
  [00] indicates the year 2000
  [01] indicates the year 2001
- The range of dates that can be entered is from January 1, 1998 to December 31, 2099.

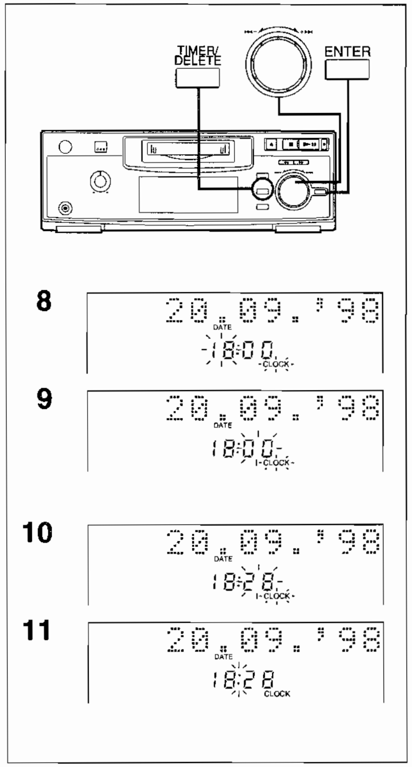
5 Press the ENTER button to set the "year".

6 Set the "month" repeating steps 4 and 5.

7 Set the "day" repeating steps 4 and 5.

- The unit will enter the time setting mode.

(Continued)



■ Setting the time

After step 7, described in the "Setting the date" section

8 Set the "hour" using the jog dial.

- When you turn the jog dial one step, the hour will change up or down by one. When you turn and hold it, the hour will change continuously.
- The clock uses the 24-hour system.

9 Press the ENTER button to set the "hour".

10 Adjust the "minute" using the jog dial.

11 Press the ENTER button to set the "minute".

- When the ENTER button is pressed, the clock will show the correct time.

Checking the date and time

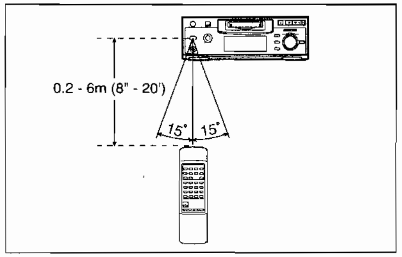
After pressing the TIMER/DELETE button, turn the jog dial until the date and time are displayed.

Resetting the date and time

See "Setting the clock".

- Once you have set the date and time, "TIME ADJUST" will not be displayed in step 2. Turn the jog dial to make the date and time appear.
- If you do not need to change the settings, just press the ENTER button without turning the jog dial again.

REMOTE CONTROL



■ Proper use of the remote control

Aim the remote control at the remote control sensor within 30° with no obstacles, and operate as shown.

Notes concerning use:

- Replace the batteries if the control distance decreases or operation becomes erratic.
- Periodically clean the transmitter window on the remote control and the sensor on the main unit with a soft cloth.
- Exposing the sensor on the main unit to strong light may interfere with operation. Change the lighting or the direction of the unit.
- Keep the remote control away from moisture, excessive heat, shock, and vibrations.
- The remote control's usable range is between 0.2 m (8") and 6 m (20') away from the sensor.

TROUBLESHOOTING

■ Moisture condensation

In the following cases, condensation may form inside the unit.

- Shortly after turning on a heater.
- When the unit is placed in a room where there is excessive steam or moisture.
- When the unit is moved from a cool place to a warm place.

When the unit has condensation inside, the disc signals cannot be read, and the product may not function properly.

- If this happens, remove the disc, and open the disc holder. The condensation should evaporate in approximately 1 hour. The unit will then function properly.

■ If a power failure occurs during recording

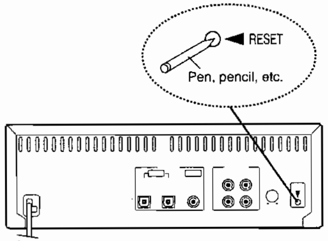
If the AC power plug is disconnected from the AC outlet or a power failure occurs during recording (before the TOC information has been recorded on the disc), the audio portion being recorded at that time will be erased. When a recording is being added to a MiniDisc which already has a recording on it, if the TOC is not updated before the power failure, the added recording will be erased.

- If a power failure occurs or the AC power cord is disconnected for about 10 minutes, when power is restored, TOC will be written on the disc.

■ If a problem occurs

If this product is subjected to strong external interference (mechanical shock, excessive static electricity, abnormal supply voltage due to lightning, etc.) or if it is operated incorrectly, it may malfunction or the display may not function correctly. If such a problem occurs, do the following:

① Unplug the AC power cord from the AC outlet.
② Wait about 20 - 30 seconds and then plug the AC power lead back into the AC outlet.
③ Press the RESET button on the back of the unit.



- When the RESET button is pressed, all of the settings in memory will be erased.
- If strange sounds, smells or smoke come out of the unit or if a foreign object falls into the unit, turn off the power, unplug the AC power cord from the AC outlet, immediately. Contact your nearest authorized Sharp servicer.

(Continued)

■ If a problem occurs

If this unit functions abnormally during operation, first check the following items. If the unit continues to function abnormally, or if an abnormality appears other than listed below, turn off the player's power and disconnect the AC power plug, then consult your SHARP dealer or service personnel.

General

SYMPTOM	POSSIBLE CAUSE	REMEDY
The clock is wrong.	Did a power failure occur?	Try setting it again.
When a button is pressed, the unit does not respond.	—	Turn the power off and on again, and then retry the operation.
Radios make unusual noise or the picture on the TV screen is distorted.	When a radio or TV which uses an indoor aerial is placed near the unit, the picture on the TV screen may be distorted or the radio may not function properly.	It is recommended that you use an outdoor aerial.

Audio

SYMPTOM	POSSIBLE CAUSE	REMEDY
A recording cannot be made.	Is the MiniDisc protected against accidental erasure?	Slide the accidental erase prevention tab back to its original position.
	Did you try to make recording on a playback-only MiniDisc?	Replace it with a recordable disc.
	Can you see the "TOC FULL" message in the display?	Put in another recordable disc with recording space on it.
Even though a disc has been loaded, "no disc" or "Error" is displayed.	Is the disc scratched? Is the unit located near excessive vibrations?	Replace the disc Place the unit on a firm, level surface free from vibration.
Playback stops in the middle of a track, or playback is not performed properly.	Is the unit located near excessive vibrations?	Place the unit on a firm, level surface free from vibration.
Playback sounds are skipped.	Has condensation formed inside the unit?	Remove the disc and leave the power turned on. The unit should function properly in about 1 hour.

Remote control

SYMPTOM	POSSIBLE CAUSE	REMEDY
The remote control does not function or does not operate properly.	The batteries (polarity) are not inserted properly.	Insert properly.
	The batteries inside the remote control are dead.	Replace the batteries.
	The remote control is operated from an incorrect distance or angle.	Operate it within a range of 0.2 m (8") to 6 m (20') and within an angle of 15° to either side of centre.
	No disc has been loaded.	Load a disc.
The power cannot be turned on from the remote control.	Is the AC power lead plugged in?	Connect the AC power lead.

(Continued)

When an error message is displayed, proceed as follows:

Error messages	Meaning	Remedy
BLANK MD	● Nothing is recorded. (Neither music nor a disc name have been recorded on this MD.)	● Replace the disc with a recorded disc.
Can't COPY	● You tried to record from a disc which you are not allowed to copy.	● Replace it with another disc which you can copy from (regular CD).
Can't EDIT	● A track cannot be edited.	● Change the stop position of the track and then try editing it.
Can't REC	● Recording cannot be performed correctly due to vibration.	● Place unit away from source of vibration.
DEFECT	● Since this disc has scratches on it, the recording operation was skipped.	● Replace the disc with another recordable disc.
Din UNLOCK	● Incorrect digital signals are input.	● Connect correct digital signals. ● Use the analogue input socket.
DISC ERR	● The disc is damaged or there is no TOC on the disc.	● Reload the disc or replace it.
DISC FULL	● The disc is out of recording space.	● Replace the disc with another recordable disc.
FOCUS ERROR	● The proper focus cannot be obtained.	● Reload the MiniDisc.
MD ERROR	● The unit has determined that it is out of order by performing a self-diagnosis.	● Ask the store where you purchased this unit, about repairs.
MECHA ERR*	● There is a mechanical problem and the disc is not working properly.	● Press the ON/STAND-BY button to enter the stand-by mode, and press the button.
NAME FULL	● The number of characters for the disc name or track name exceeds 100.	● Shorten the disc or track name.
NO DISC	● A MiniDisc has not been loaded. ● The MiniDisc data cannot be read.	● Load a MiniDisc. ● Reload the MiniDisc.
NOT AUDIO	● The data recorded on this disc is not audio data.	● Select another track. ● Replace the MiniDisc.
PLAYBACK MD	● You tried to record on a playback-only disc. ● The data of disc names and track names are not able to move from playback-only discs.	● Replace it with a recordable MiniDisc. ● Edit only the sound.
PROTECTED	● The MiniDisc is write protected.	● Move the write protection tab back to its original position.
TEMP OVER	● The temperature is too high.	● Press the ON/STAND-BY button to enter the stand-by mode, and wait for a while.
TOC ERR*	● The disc has a large amount of damage. ● TOC information cannot be read. ● The MD does not meet the specifications for MDs.	● Replace the disc with another disc.
TOC FULL*	● There is no space left for recording character information (track names, disc names, etc.)	● Replace it with another recordable disc.
TOC W ERROR	● The unit has determined that it is abnormal by performing a self-diagnosis.	● Ask the store where you purchased this unit, about repairs.
U TOC ERR*	● The TOC information on this disc does not meet the MD specifications or it cannot be read.	● Replace it with another disc. ● Erase all the data, and try recording.
U TOC W ERR	● The TOC information could not be created properly due to a mechanical shock or to scratches on the disc.	● Press the ON/STAND-BY button to enter the stand-by mode, and try to write the TOC again. (Remove any source of shock or vibration whilst writing.)
? DISC	● The data contains an error.	● Replace the disc with another disc.
0 0:00	● Music is not being recorded.	● Replace the disc with a recorded disc.

*: Number or symbol

DISASSEMBLY

Caution on Disassembly
Follow the below-mentioned notes when disassembling the unit and reassembling it, to keep it safe and ensure excellent performance:

1. Take the minidisc out of the unit.
2. When disassembling the machine, be sure to withdraw the power plug from the socket in advance.
3. When disassemble the parts, remove the nylon band or wire holder as necessary.
   To assemble after repair, be sure to arrange the wires as they were.
   If a screw of different length is fitted to the MD mechanism (the screw of the part to be fitted to the MD mechanism chassis), it may contact the optical pickup, resulting in malfunction.
4. When repairing, pay due attention to electrostatic charges of IC.

STEP	REMOVAL	PROCEDURE	FIGURE
1	Top Cabinet	1. Screw .... (A1) x5	9-1
2	Rear Panel	1. Screw .... (B1) x5	9-2
3	MD Unit	1. Screw .... (C1) x5 2. Flat Cable .... (C2) x1 3. Socket .... (C3) x1	9-2
4	Front Panel	1. Screw .... (D1) x5 2. Flat Cable .... (D2) x1 3. Socket .... (D3) x2	9-3 9-2
5	Main PWB (with Power Transformer)	1. Screw .... (E1) x9	9-3
6	Display PWB	1. Screw .... (F1) x6 2. Knob .... (F2) x2	9-4
7	Headphones PWB	1. Screw .... (G1) x2	9-4
8	MD Mechanism Unit	1. Screw .... (H1) x4	10-1
9	MD Main PWB	1. Screw .... (J1) x4 2. Socket .... (J2) x4 3. Flat Cable .... (J3) x1	10-2
10	MD Mechanism	1. Screw .... (K1) x4	10-3

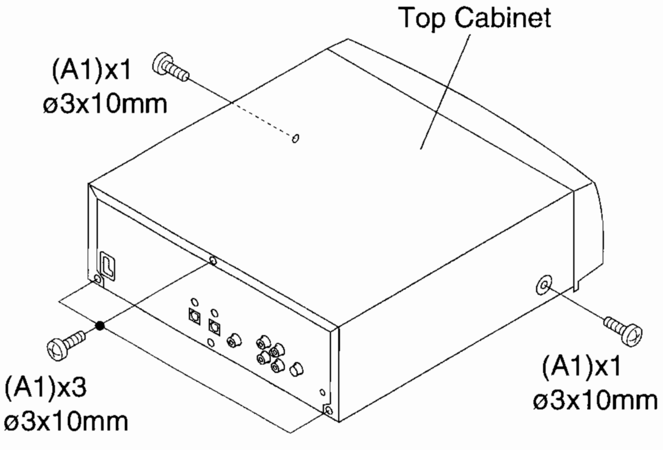

Top Cabinet
(A1)x1
ø3x10mm
(A1)x3
ø3x10mm
(A1)x1
ø3x10mm

Figure 9-1

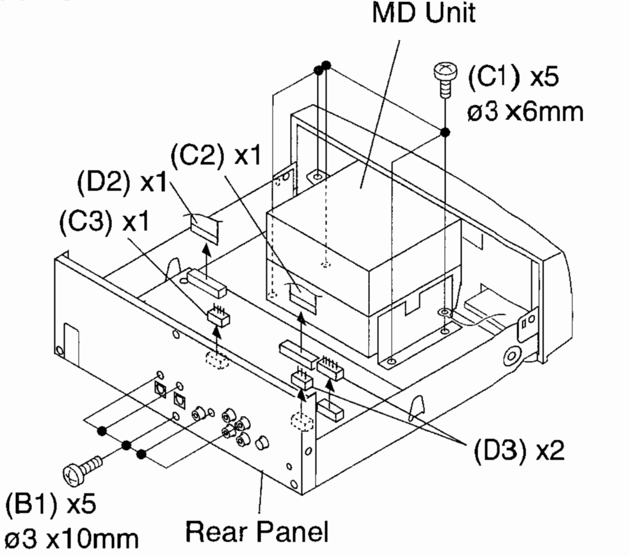

MD Unit
(C1) x5
ø3 x6mm
(C2) x1
(D2) x1
(C3) x1
(D3) x2
(B1) x5
ø3 x10mm
Rear Panel

Figure 9-2

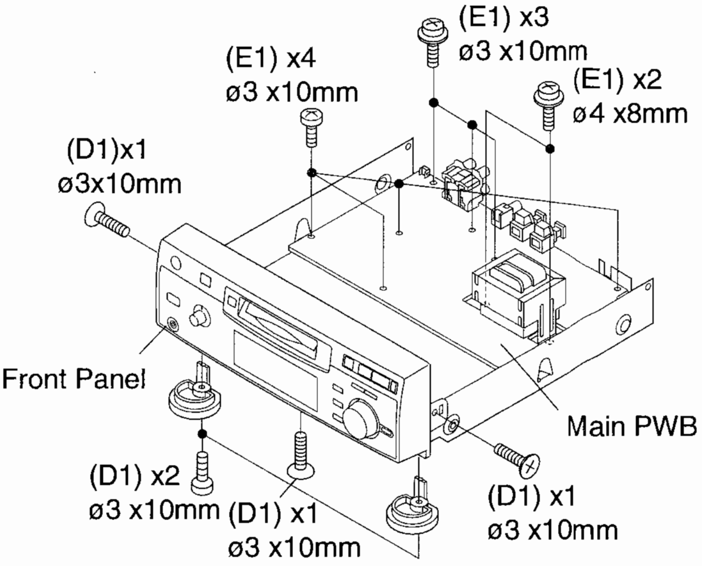

(E1) x3
ø3 x10mm
(E1) x4
ø3 x10mm
(E1) x2
ø4 x8mm
(D1)x1
ø3x10mm
Front Panel
Main PWB
(D1) x2
ø3 x10mm
(D1) x1
ø3 x10mm
(D1) x1
ø3 x10mm

Figure 9-3

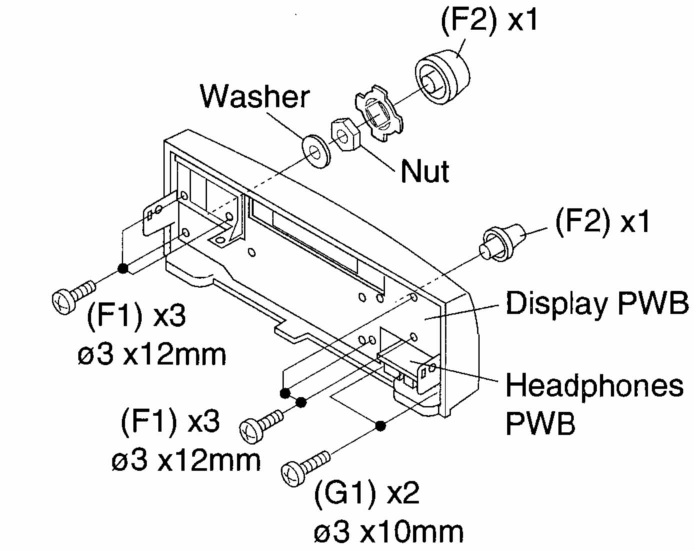

(F2) x1
Washer
Nut
(F2) x1
Display PWB
(F1) x3
ø3 x12mm
Headphones PWB
(F1) x3
ø3 x12mm
(G1) x2
ø3 x10mm

Figure 9-4

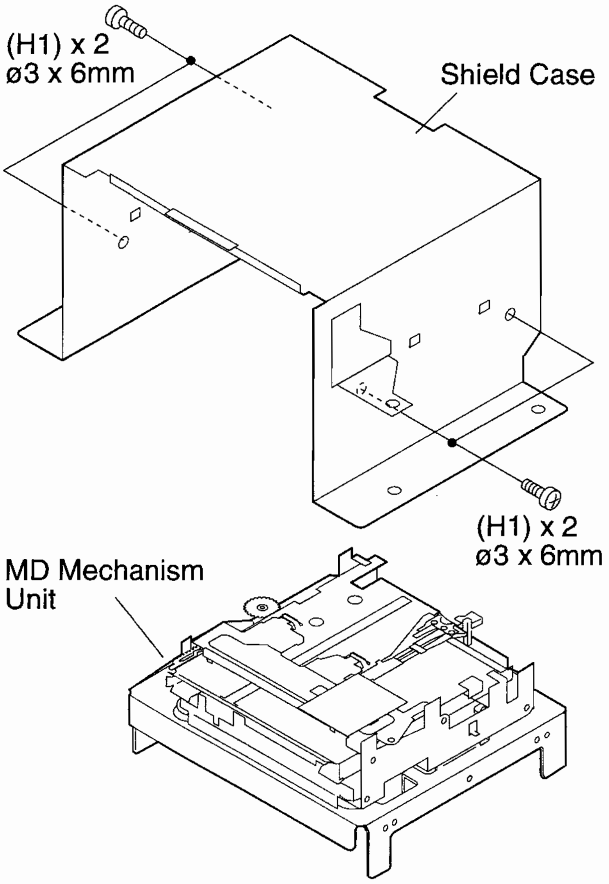

(H1) x 2
ø3 x 6mm
Shield Case
(H1) x 2
ø3 x 6mm
MD Mechanism Unit

Figure 10-1

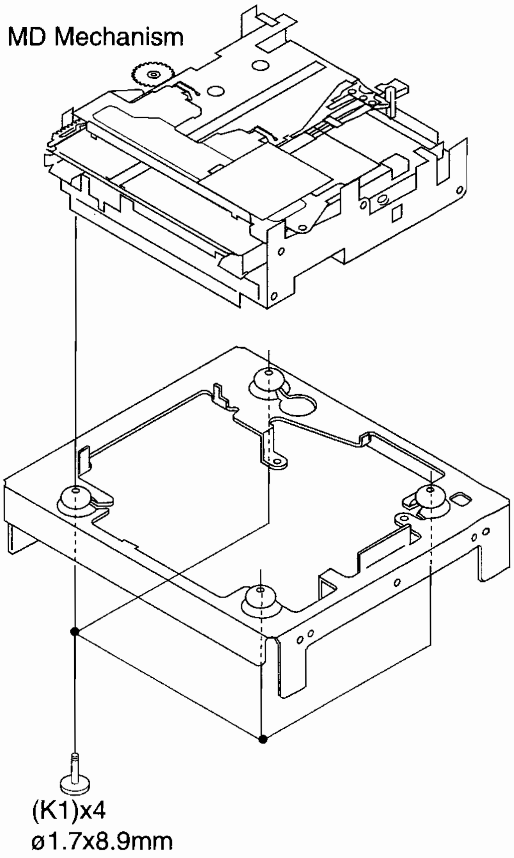
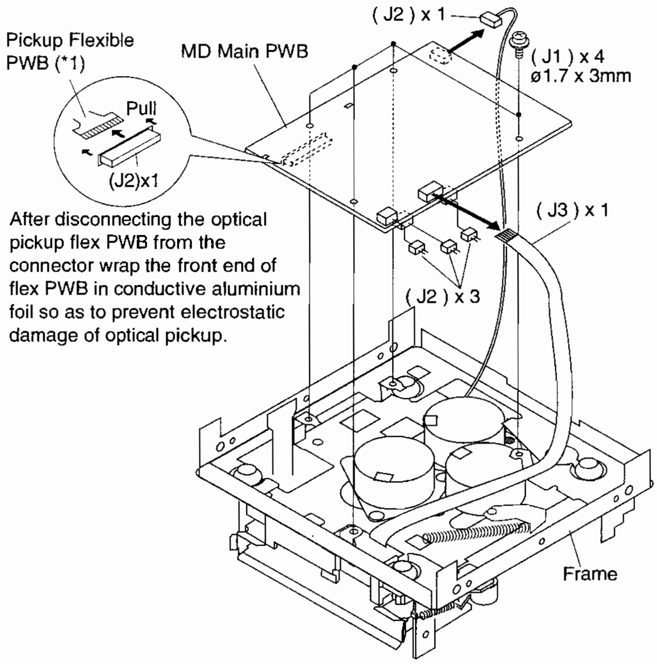

MD Mechanism
(K1)x4
ø1.7x8.9mm

Figure 10-3


(J2) x 1
Pickup Flexible PWB (*1)
MD Main PWB
(J1) x 4
ø1.7 x 3mm
Pull
(J2)x1
(J3) x 1
(J2) x 3
Frame

(*1) After disconnecting the optical pickup flex PWB from the connector wrap the front end of flex PWB in conductive aluminium foil so as to prevent electrostatic damage of optical pickup.

Figure 10-2

REMOVING AND REINSTALLING THE MAIN PARTS

MD MECHANISM SECTION

Perform steps 1 to 3 of the disassembly method to remove the MD mechanism.

How to remove the magnetic head (See Fig. 11-1)

1. Remove the screws (A1) x 1 pc.

Caution:

Take utmost care so that the magnetic head is not damaged when it is mounted.

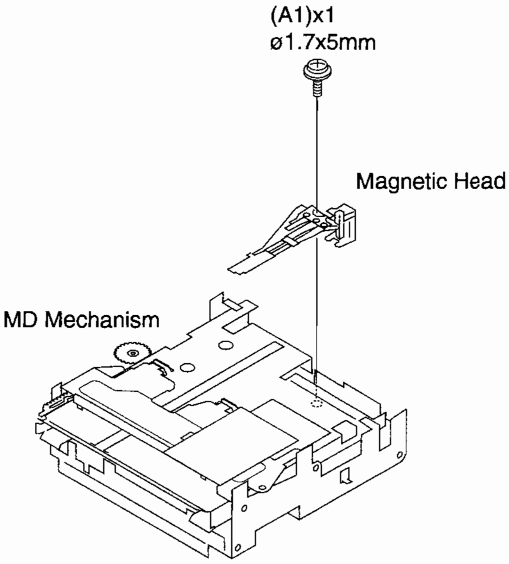

(A1)x1
ø1.7x5mm
Magnetic Head
MD Mechanism

Figure 11-1

How to remove the cartridge holder (See Fig. 11-2)

1. Open the rpller arm lever in the arrow direction, and lower the clamper lever to the rear side.
2. Apply +5V to the red line side of blue connector of loading motor, push the rack gear in the arrow direction to move the cam plate lever until tick is heard.
3. Remove the screw (B1) x1 pc., and the spring (B2) x1 pc., fitted to the holder arm, and shift the cartridge holder to the left side to remove it.

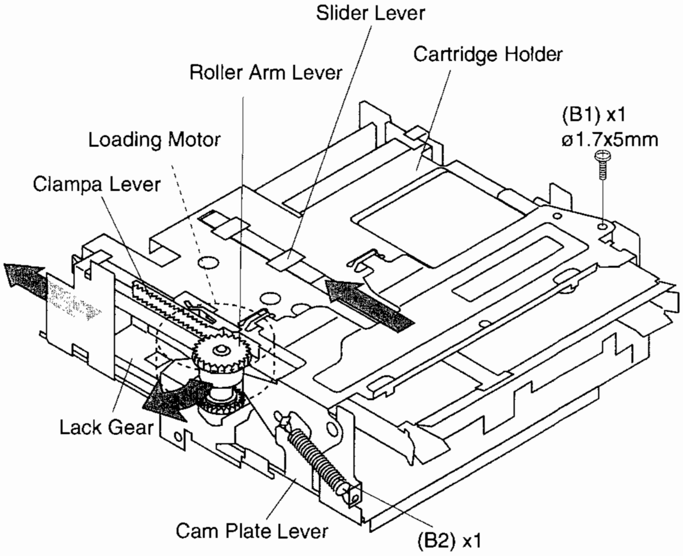

Slider Lever
Roller Arm Lever
Cartridge Holder
(B1) x1
ø1.7x5mm
Loading Motor
Clampa Lever
Lack Gear
Cam Plate Lever
(B2) x1

Figure 11-2

How to remove the mechanism switch PWB (See Fig. 11-3)

1. Remove the screws (C1) x 2 pcs., and remove the mechanism switch PWB.

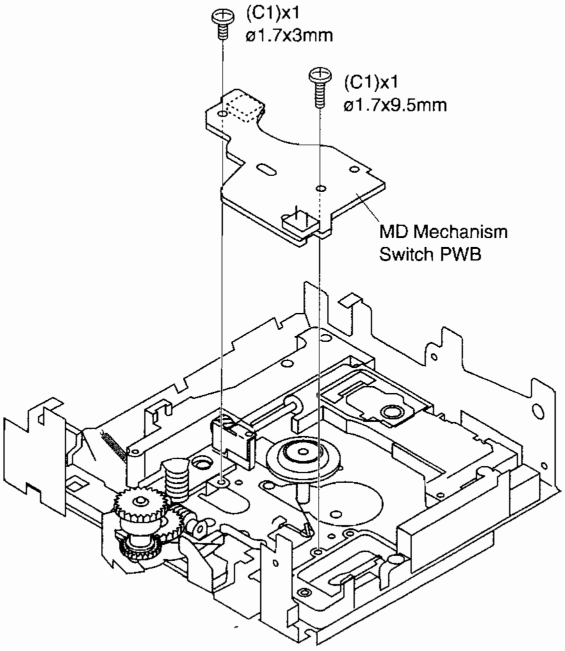

(C1)x1
ø1.7x3mm
(C1)x1
ø1.7x9.5mm
MD Mechanism
Switch PWB

Figure 11-3

How to remove the sled motor/loading motor (See Fig. 12-1)

1. Remove the screws (D1) x 4 pcs., and remove the sled motor/loading motor.

Caution:

Be careful so that the gear is not damaged.
(The damaged gear emits noise during searching.)

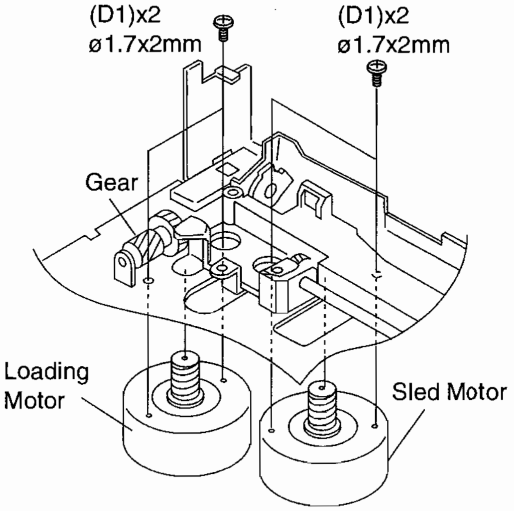

(D1)x2
ø1.7x2mm
(D1)x2
ø1.7x2mm
Gear
Loading Motor
Sled Motor

Figure 12-1

How to remove the spindle motor (See Fig. 12-2)

1. Remove the screws (E1) x 3 pcs., and remove the spidle motor.

Caution:

Be careful so that the turntable is not damaged.

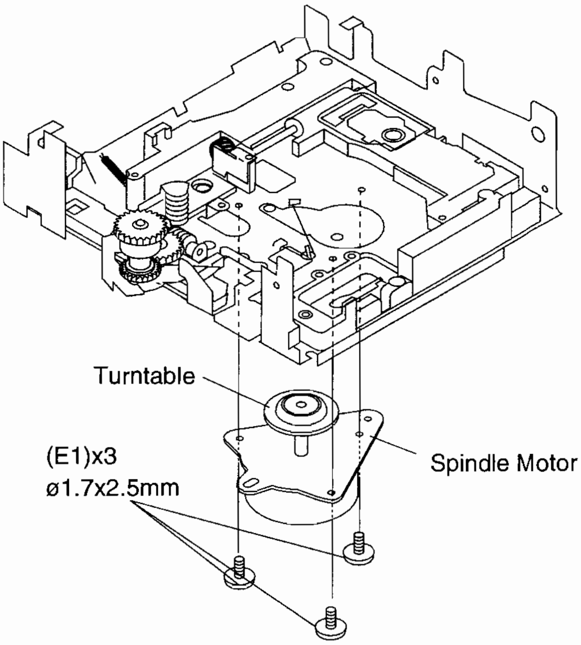

Turntable
(E1)x3
ø1.7x2.5mm
Spindle Motor

Figure 12-2

How to remove the optical pickup (See Fig. 12-3)

1. Remove the screws (F1) x 3 pcs.

Caution:

Be careful so that the gear is not damaged.
(The damaged gear emits noise during searching.)

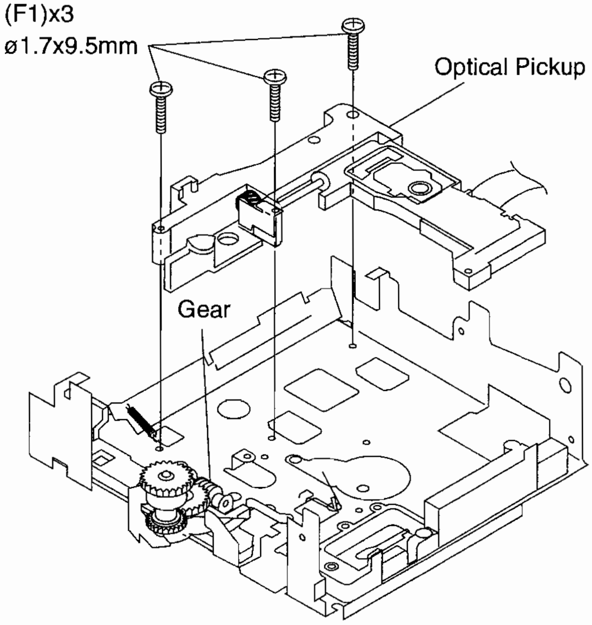

(F1)x3
ø1.7x9.5mm
Optical Pickup
Gear

Figure 12-3

ADJUSTMENT

MD SECTION

1. Preparation for confirmation adjustment

When a combination of the mechanism, pickup and PWB is changed, and the EEPROM is replaced, enter the test mode, and make preliminary adjustments.
Then rewrite the data to the EEPROM.

Test disc

	Type	Test disc	Part No.
1	High reflection disc	TGYS1 (SONY)	RRCDT0101AFZZ
2	Low reflection disc	Recording Operation check minidisc	UDSKM0001AFZZ
3	————	Head for verification transparent	RRCDT0103AFZZ
4	Low reflection disc	Pre-Adjusting minidisc (TEAC TESTMD)	88GMMD318

Extension Cable (See Fig. 18-4)

	Type	Part No.
1	Extension PWB for servicing	RUNTK0457AFZZ
2	Extension Connector (2 Pin)	QCNWK0059AFZZ
3	Extension Connector (6 Pin)	QCNWK0107AFZZ
4	Extension Cable (5 Pin)	QCNWK0109AFZZ
3	Extension Cable (28 Pin)	QCNWK0108AFZZ

2. Test mode

Test mode setting method

1. Holding down the ENTER button and MD▶❚❚ (PLAY/PAUSE) button, press the RESET button.
   (State Ⓐ is changed to state Ⓑ.)
2. Insert the playback disc 1 (high reflection disc) or recording disc 2 (low reflection disc). (State Ⓒ is set.)
   Thus, the test mode state is set.

Ⓐ tsm ○○○○e○○ : TEST MODE
TEST STOP state
↓
Ⓑ EJECT
TEST
↓
Ⓒ AUT YOBI
TEST

○○ represents version of MD microcomputer.
(When the MD■(STOP) button is ressed in the Ⓒ state, the indication Ⓐ is restored. To restore Ⓒ again, press the ENTER button.)

Entering the specific mode

Whenever the ENTER button is pressed, the mode is changed.

→ AUTO pre-adjustment → AUTO adjustment → RESULT SUB → RESULT
EEPROM setting ← MANUAL adjustment ← MANUAL pre-adjustment ←

• Canceling the test mode

- When the RESET button is pressed, the test mode is canceled, and the POWER OFF state is set.
- If you press the POWER button, the test mode will be can celled after writing into EEPROM and the mode without auto adjustment will be actiated.

Important:

When the EEPROM values are changed or after preliminary adjustments have been made again, be sure to press the POWER button to write the changed data to the EEPROM. (Pressing the POWER button allows the modified data to be written to the EEPROM.)

• Test Mode

1. EJECT mode	• TEMP setting (of EEPROM setting) • CONTROL setting (of EEPROM setting) • Measurement of laser power (record/playback power)
2. AUTO pre-adjustment mode	• Automatic pre-adjustment is performed. (After adjustment the grating adjustment mode is set.) • The adjustment value is output with the aid of system controller interf
3. AUTO adjustment mode	• Automatic adjustment is performed. (After adjustment the grating adjustment mode is set.) • The adjustment value is output with the aid of system controller interface. • Continuous playback is performed. (Error rate indication, jump test)
4. EEPROM setting mode	• Various coefficients of digital servo are changed manually.
5. TEST-PLAY mode	• Continuous playback from the specified address is performed. • C1 error rate measurement, ADIP error rate measurement.
6. TEST-REC mode	• Continuous recording from the specified address is performed.
7. INNER mode	• The position where the INNER switch is turned on is measured.

1. EJECT mode

Step No.	Setting Method	Remarks	Display
Step 1	Testmode EJECT state		[__EJECT___]
Step 2	Press oncethe DISPLAY/ CHARACTER button.	Max. power output state	[xpw________]
Step 3	Press once the DISPLAY/ CHARACTER button.	Record power output state	[rpw________]
Step 4	Press once the DISPLAY CHARACTER button.	Playback power output state	[ppw________]
Step 5	Press the DELETE/CLEAR button.	TEMP setting of EEPROM setting (Refer to TEMP setting of EEPROM)	
Step 6	Press the NAME/TOC EDIT button.	CONTROL setting of EEPROM setting (Refer to CONTROL setting of EEPROM)	

2. AUTO pre-adjustment mode (Low reflection disc only)
Use a pre-adjustment disc (MMD-318).

Step No.	Setting Method	Remarks	Display
Step 1	Testmode STOP state		[tsm○○○○e○○]
Step 2	Press once the ENTER button.	AUTO pre-adjustment menu	[AUTO]
Step 3	Press once the MD PLAY button. End of adjustment	The slide moves to the innermost periphery, and automatic pre-adjustment is started. • During automatic adjustment ✱✱✱ changes as follows. HAo→LAO If adjustment is OK, Step 4. If adjustment is NG, Step 5.	[✱✱✱:_______]
Step 4	Grating adjustment, adjustment value output Press once the MD STOP button.	STEP 2	[_COMPLETE_]
Step 5	Adjustment value output Press once the MD STOP button.	Return to STEP 2.	[Can't_ADJ.]

• ✱✱✱ : Adjustment name

3. AUTO adjustment mode

Step No.	Setting Method	Remarks	Display
Step 1	Testmode STOP state		[tsm◯◯◯◯e◯◯]
Step 2	Press the ENTER button two times.	AUTO adjustment menu	[AUTO_AJST_]
Step 3	Press once the MD PLAY button. End of adjustment	The slide moves to the innermost periphery, and automatic adjustment is started. • In case of high reflection disc ✱✱✱ changes as follows. PEG→HAG •In case of low reflection disc ✱✱✱ changes as follows. PEG→LAG→GCG→GEG→LAG If adjustment is OK, Step 4. If adjustment is NG, Step 7.	[✱✱✱:______]
Step 4	Adjustment value output Press the MD PLAY button. Press the MD STOP button.	Grating adjustment STEP 5 STEP 2	[_COMPLETE_]
Step 5	Continuous playback (pit section) Continuous playback (groove section)	C1 error check	[s□□□□c◯◯◯◯] [a□□□□c◯◯◯◯]
Step 6	Press the DISPLAY button. Press the MD STOP button.	ADIP error check Return to STEP 2.	[a□□□□a◯◯◯◯]
Step 7	Adjustment value output Press the MD STOP button.	Return to STEP 2.	[Can't_ADJ.]

- ✱✱✱ : Adjustment name, ◯◯ : Measurement value, □□□□ : Address

4. EEPROM setting mode

a) Focus setting

Step No.	Setting Method	Display
Step 1	Testmode STOP state	[tsm◯◯◯◯e◯◯]
Step 2	Press the ENTER button seventimes.	[EEPROM_SET]
Step 3	Press once the MD PLAY button.	[__Focus___]
Step 4	Press once the ENTER button.	[FG______◆◆]
Step 5	Press once the ENTER button.	[FF1_____◆◆]
Step 6	Press once the ENTER button.	[FF2_____◆◆]
Step 7	Press once the ENTER button.	[FZHLEV__◆◆]
Step 8	Press once the ENTER button.	[FOKLEVn_◆◆]
Step 9	Press once the ENTER button.	[FOKLEVf_◆◆]
Step 10	Press once the ENTER button.	[FOKLPFn_◆◆]
Step 11	Press once the ENTER button.	[FOKLPFf_◆◆]
Step 12	Press once the ENTER button.	[WAITf___◆◆]

- ◆◆ : Setting volue

b) Spindle setting

Step No.	Setting Method	Display
Step 1	Testmode STOP state	[tsm◯◯◯◯e◯◯]
Step 2	Press the ENTER button seven times.	[EEPROM_SET]
Step 3	Press once the MD PLAY button.	[__Focus___]
Step 4	Press once the ENTER button.	[_Spindle__]
Step 5	Press once the ENTER button.	[SPG_____◆◆]
Step 6	Press once the ENTER button.	[SPG_in__◆◆]
Step 7	Press once the ENTER button.	[SPG_mid_◆◆]
Step 8	Press once the ENTER button.	[SPG_out_◆◆]
Step 9	Press once the ENTER button.	[SP1_____◆◆]
Step 10	Press once the ENTER button.	[SP2_____◆◆]
Step 11	Press once the ENTER button.	[SP3_____◆◆]
Step 12	Press once the ENTER button.	[SP4_____◆◆]
Step 13	Press once the ENTER button.	[SP5_____◆◆]
Step 14	Press once the ENTER button.	[SPDLIM__◆◆]

- ◆◆ : Setting volue

c) Tracking setting

Step No.	Setting Method	Display
Step 1	Testmode STOP state	[tsm◯◯◯◯e◯◯]
Step 2	Press the ENTER button seven times.	[EEPROM_SET]
Step 3	Press once the MD PLAY button.	[__Focus___]
Step 4	Press the ENTER button two times.	[_Tracking_]
Step 5	Press once the MD PLAY button.	[TG______◆◆]
Step 6	Press once the ENTER button.	[TF1_____◆◆]
Step 7	Press once the ENTER button.	[TF2_____◆◆]
Step 8	Press once the ENTER button.	[SVCNT4__◆◆]
Step 9	Press once the ENTER button.	[TRBLV0__◆◆]
Step 10	Press once the ENTER button.	[TRBLVt__◆◆]
Step 11	Press once the ENTER button.	[TRKLV0__◆◆]
Step 12	Press once the ENTER button.	[TRKLVt__◆◆]
Step 13	Press once the ENTER button.	[TDPWo___◆◆]
Step 14	Press once the ENTER button.	[TDPWt___◆◆]
Step 15	Press once the ENTER button.	[SLCT0___◆◆]
Step 16	Press once the ENTER button.	[SLCTt___◆◆]
Step 17	Press once the ENTER button.	[SLCTm__◆◆]
Step 18	Press once the ENTER button.	[TCRSCIP_◆◆]
Step 19	Press once the ENTER button.	[COTLVp__◆◆]
Step 20	Press once the ENTER button.	[COTLVr__◆◆]
Step 21	Press once the ENTER button.	[WAITm___◆◆]

- ◆◆ : Setting volue

d) Sled setting

Step No.	Setting Method	Display
Step 1	Testmode STOP state	[tsm○○○○ e ○○]
Step 2	Press the ENTER button seven times.	[EEPROM_SET]
Step 3	Press once the MD PLAY button.	[__Focus___]
Step 4	Press the ENTER button three times.	[___Sled___]
Step 5	Press once the MD PLAY button.	[SLG______◆◆]
Step 6	Press once the ENTER button.	[SL2______◆◆]

Step No.	Setting Method	Display
Step 7	Press once the ENTER button.	[SLDLIM__◆◆]
Step 8	Press once the ENTER button.	[SLDLEV__◆◆]
Step 9	Press once the ENTER button.	[SLKLVk__◆◆]
Step 10	Press once the ENTER button.	[SLKLVt__◆◆]
Step 11	Press once the ENTER button.	[SLKLVm__◆◆]

• ◆◆ : Setting volue

e) TEMP setting

Step No.	Setting Method	Remarks	Display
Step 1	EJECT state (or mechanism-less state)		[__EJECT___]
Step 2	Press the DELETE/CLEAR button.	TEMP reference value setting	[TEMP_○○_◆◆]

• ◆◆ : Setting volue, ○○ : Measurement value

f) CONTROL setting

Step No.	Setting Method	Display
Step 1	Testmode STOP state	[tsm○○○○ e ○○]
Step 2	Press the ENTER button seven times.	[EEPROM_SET]
Step 3	Press once the MD PLAY button.	[__Focus___]
Step 4	Press the ENTER button five times.	[_Control__]
Step 5	Press once the MD PLAY button.	[CONTRL1_◆◆]
Step 6	Press once the ENTER button.	[CONTRL2_◆◆]
Step 7	Press once the ENTER button.	[SPKLEVm_◆◆]
Step 8	Press once the ENTER button.	[ADJTTM__◆◆]
Step 9	Press once the ENTER button.	[HDEQAD__◆◆]
Step 10	Press once the ENTER button.	[LDEQAD__◆◆]

Step No.	Setting Method	Display
Step 11	Press once the ENTER button.	[GDEQAD__◆◆]
Step 12	Press once the ENTER button.	[HDEQBC__◆◆]
Step 13	Press once the ENTER button.	[LDEQBC__◆◆]
Step 14	Press once the ENTER button.	[GDEQBC__◆◆]
Step 15	Press once the ENTER button.	[HALSG___◆◆]
Step 16	Press once the ENTER button.	[LALSG___◆◆]
Step 17	Press once the ENTER button.	[GALSG___◆◆]
Step 18	Press once the ENTER button.	[HALSOF__◆◆]
Step 19	Press once the ENTER button.	[LALSOFS_◆◆]
Step 20	Press once the ENTER button.	[GALSOFS_◆◆]

• ◆◆ : Setting volue

g) ADJUST setting

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state (or continuous record/playback state or specific menu state of other mode)		[tsm○○○○ e ○○]
Step 2	Press the ENTER button seven times.	EEPROM setting menu	[EEPROM_SET]
Step 3	Press once the MD PLAY button.	Focus setting menu	[__Focus___]
Step 4	Press the ENTER button six times.	CONTROL setting menu	[_ADJUST___]
Step 5	Press once the MD PLAY button.	COUT level calculation coefficient setting	[COK______◆◆]
Step 6	Press once the ENTER button.	Focus system reference value setting	[FAT______◆◆]
Step 7	Press once the ENTER button.	Tracking system reference value setting	[TAT______◆◆]
Step 8	Press once the ENTER button.	Track cross system reference value setting	[CAT_______◆◆]
Step 9	Press once the ENTER button.	Focus balance correction value setting	[FAB_______◆◆]
Step 10	Press once the ENTER button.	Tracking ATT shift value setting	[STR_______◆◆]
Step 11	Press once the ENTER button.	Focus ATT shift value setting	[SFS_______◆◆]
Step 12	Press once the ENTER button.	TCRS ATT shift value setting	[STC_______◆◆]

◆◆: Setting value

5. TEST-PLAY mode (Used for checking the playback preformance at the specified address.)

Step No.	Setting Method	Remarks	Display
Step 1	Testmode STOP state		[ts m○○○○ e ○○]
Step 2	Press the TIMER/DELETE/CLEAR button.	TEST-PLAY menu	[TEST_PLAY_]
Step 3	Press once the DISPLAY/ CHARACTER button. Press once the MD PLAY button.	ADRES setting (Target address initial value is indicated)	[ADRES_0050]
Step 4	Continuous playback (pit section) Continuous playback (groove section)	(Address + C1 error indication) (Address + C1 error indication)	[s□□□□ c ○○○○] [a□□□□ c ○○○○]
Step 5	Press once the DISPLAY/ CHARACTER button.	(Address + ADIP error indication)	[a□□□□ a ○○○○]
Step 6	Press once the MD STOP button.	TEST-PLAY menu	[TEST_PLAY_]

- If the MD STOP button is pressed while the TEST-PLAY menu is displayed, TEST mode STOP state is set.
- If the MD PLAY button is pressed while the TEST-PLAY menu is displayed, continuous playback is started from the current pickup position.
- Whenever the TIMER/DELETE/CLEAR button is pressed in the address setting mode, the address changes as follows.
  0050 → 03C0 → 0700 → 08A0 → 0050 → ....
- Whenever the DISPLAY/CHARACTER button is pressed in the address setting mode, the digit which is changed with - |◀◀ / ▶▶| + changes as follows.
  0050 → 0050 → 0050 → 0050 → ....
- The digit of address which has been specified with - |◀◀ / ▶▶| + and DISPLAY/CHARACTER button in the address setting mode is set to +01H/ -01H.
  * If the - |◀◀ / ▶▶| + button is held down, the setting changes continuously.
- □□□□ : Adress, ○○○○ Error late

6. TEST-REC mode
(Used for checking the recording preformance at the specified address.)
Use a disc to check the recording operation.

Step No.	Setting Method	Remarks	Display
Step 1	Testmode STOP state		[ts m○○○○ e ○○]
Step 2	Press the TIMER/DELETE/CLEAR button.	TEST-REC menu	[TEST_REC__]
Step 3	Press once the DISPLAY/ CHARACTER button.	ADRES setting (indication of address initial value)	[a0050_pw▽▽]
Step 4	Press once the MD PLAY button.	During search the search output pin 11 is set to "H", and it is (returned on "L" when continuous playback is started.Address + C1 error indication) Continuous recording	[a□□□□ pw ▽▽]
Step 5	Press once the MD STOP button.	TEST-REC menu	[TEST_REC__]

- If the MD STOP button is pressed while the TEST-PLAY menu is displayed, TEST mode STOP state is set.
- If the MD PLAY button is pressed while the TEST-REC menu is displayed, continuous record is started from the current pickup position.
- Whenever the TIMER/DELETE/CLEAR button is pressed in the address setting mode, the address changes as follows.
  0050 → 03C0 → 0700 → 08A0 → 0050 → ....
- Whenever the DISPLAY/CHARACTER button is pressed in the address setting mode, the digit which is changed with - |◀◀ / ▶▶| + changes as follows.
  0050 → 0050 → 0050 → 0050 → ....
- The digit of address which has been specified with - |◀◀ / ▶▶| + and DISPLAY/CHARACTER button in the address setting mode is set to +01H/ -01H.
  * If the - |◀◀ / ▶▶| + button is held down, the setting changes continuously with 100 ms cycle.
- □□□□ : Adress, ▽▽ : Laser power cord

7. INNER mode

Step No.	Setting Method	Remarks	Display
Step 1	Testmode STOP state		[ts m○○○○ e ○○]
Step 2	Press the NAME/TOC EDIT button.	INNER menu	[__INNER__]
Step 3	Press once the MD PLAY button.	INNER switch position measurement (SUBQ address and C1 error are also indicated.)	[s□□□□ c ○○○○]
Step 4	Press once the MD STOP button.	INNER menu	[__INNER__]

- □□□□ : Adress
- Press the MD STOP button while the INNER menu is displayed, to shift to the TEST mode STOP state.

The pickup laser power can be checked, and the laser power can be checked using the laser power meter during recording and playback. However, since measurements by the laser power meter will vary, only the laser power is checked.

Reference Value: (When room temperature is 25 °C)
During playback: 0.72 ± 0.1 mW
While recording: 5 ± 1 mW

Warning:
Pay special attention because looking directly at a laser light source may damage your eyes.

● Lead-in switch position measurement mode (Use the high-reflenctivity test disc TGYS1)

Note: Adjust the lead-in switch position to FF85 to FFD2.

1. Loosen the screw (A) x 3 pcs. which fix the mechanism switch PWB.
2. Retighten the screw, pressing the mechanism switch PWB in the arrow direction, and then measure the lead-in switch position again.
   After position adjustment fix with the three screws (A).
   (See Fig. 18-1.)

Note: After tightening the two screws on the PWB apply Screw Lock.

● Forced rotation of loading motor

While the display indication is test mode STOP state or EJECT state, the loading motor can be forcibly rotated by press the JOG UP/DOWN button.

● Mechanism Adjustment
Optical pickup grating inspecting method

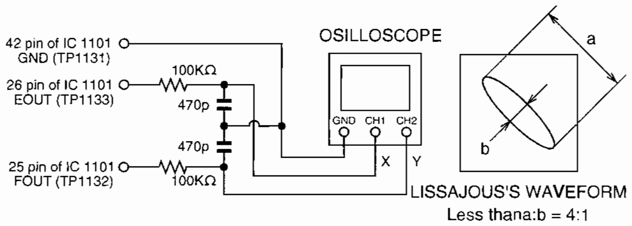

42 pin of IC 1101
GND (TP1131)
26 pin of IC 1101
EOUT (TP1133)
25 pin of IC 1101
FOUT (TP1132)
100KΩ
470p
470p
100KΩ
OSILLOSCOPE
GND
CH1
CH2
X
Y
a
b
LISSAJOUS'S WAVEFORM
Less thana:b = 4:1

Figure 18-2 Optical Pickup Grating Deviation Measuring Method

After the automatic adjustment is performed in the AUTO mode (test mode) with the aid of high refection MD disc (TGYS1) ("COMPLATE" is displayed), the Lissajous's waveform (x-y) is adjusted.

1. Slightly loosen the 3 screws of spindle moto, and maken an adjustment, observing the Lissajous's waveform.
2. After adjustment tighten the screw in arder of ①, ②, ③.

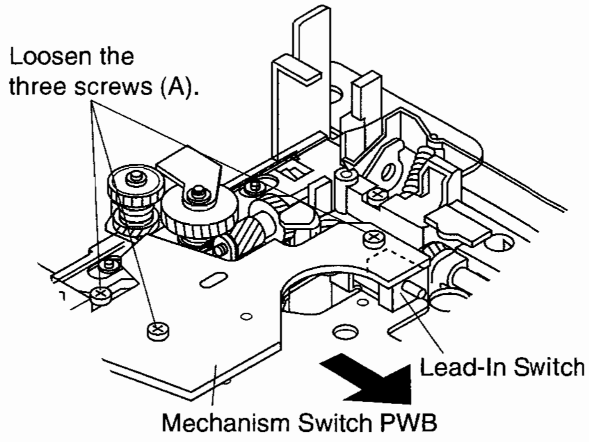
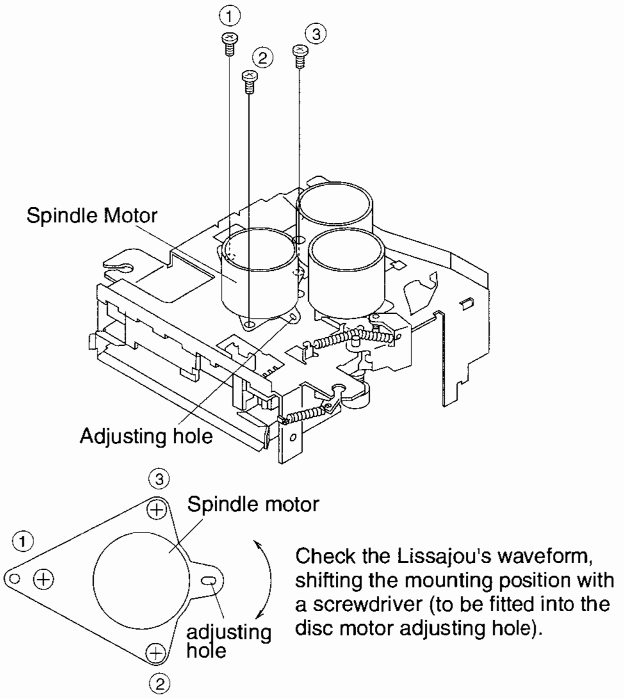

Loosen the
three screws (A).
Lead-In Switch
Mechanism Switch PWB

Figure 18-1


①
②
③
Spindle Motor
Adjusting hole
③
Spindle motor
①
adjusting
hole
②

Check the Lissajou's waveform, shifting the mounting position with a screwdriver (to be fitted into the disc motor adjusting hole).

Figure 18-3

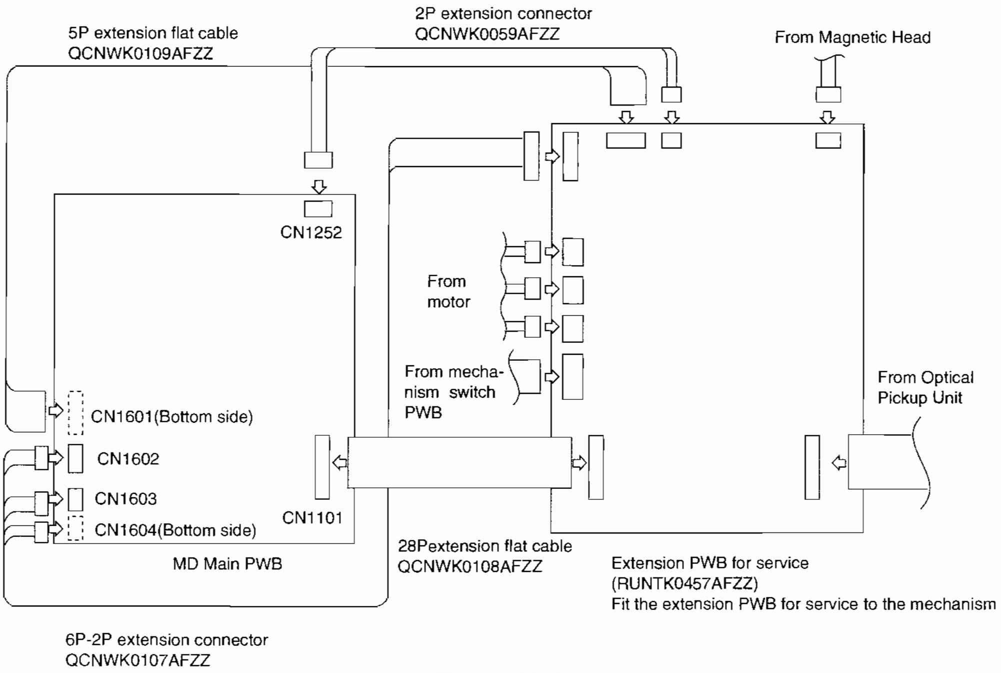

2P extension connector
QCNWK0059AFZZ
5P extension flat cable
QCNWK0109AFZZ
From Magnetic Head
CN1252
From
motor
From mecha-
nism switch
PWB
From Optical
Pickup Unit
CN1601(Bottom side)
CN1602
CN1603
CN1604(Bottom side)
CN1101
MD Main PWB
28Pextension flat cable
QCNWK0108AFZZ
Extension PWB for service
(RUNTK0457AFZZ)
Fit the extension PWB for service to the mechanism
6P-2P extension connector
QCNWK0107AFZZ

Figure 18-4

EXPLANATION OF ERROR DISPLAY

Error display	Errors	Corrective action
Can't REC	• Defect occurred successively 10 times during REC-PLAY. • As a result of occurrence of defect during REC-PLAY the recordable cluster became zero. • Adress is unreadable. REC state connot be set for 20 seconds although retry is repeated.	• Check that the disc is free from flaw, dust and fingerprint. Check whether there is any black spot. Check for disc disalignment and run-out.
Can't COPY	• The following judgement is made according to the channel status of digital signal which was input from D-IN during REC-PAUSE or REC-PLAY. (1) Other than audio signal (2) Other than signals of home-use appliances (3) Copy NG due to alternation of copy bit in CD.	• Check whether CD is copy-inhibited one. (An exabple: CD-R)
Din UNLOCK	• The digital signal which was input from D-IN during REC-PAUSE, REC-PLAY or CD FUNC playback caused the following. (1) PLL of digital IN was unlocked.	• Check whether there is any abnormality in the D-IN signal line.
TOC FULL	• There were no areas to record music or character infomation.(music name, disc name, etc.) during REC-PLAY. • When an attempt to start is made, recordable area does not remain.	• Replace the disc with a recording/ playback disc in which an area to register UTOC remains.
UTOC ERR R	• FTNO > LTNO • FTNO ≠ 0 or 1 • UTOC recorded on disc could not be read.	• UTOC data is not normal. Replace the disc with other disc.
UTOC ERR A	• Start address > End address disc with other disc.	• UTOC data is not normal. Replace the
UTOC ERR L0~4	• Any data of UTOC 0 to 4 looped. disc with other disc.	• UTOC data is not normal. Replace the
NOT AUDIO	• Nonaudio data was recorded in the track mode of currently selected TNO.	• Select other TNO or replace the disc with other disc.
? DISC	• Data "MINI" of system ID which has been written in TOC with ASCII code is not correct. • The disc type written in TOC does not correcpond to pre/ mastered MD, recording MD and hybrid MD.	• The loaded disc is not applicable. Replace the disc, and check.
DISC FULL	• When an attempt to set REC-PAUSE was made, there were no recordable areas.	• Replace the disc with other recording disc in which recording area remains.
PLAYBACK MD	• An attempt to set REC-PAUSE or to start editing was made on the playback-only disc.	• The loaded disc is a Playback-only disc. Replace the disc with a recording disc.
PROTECTED	• An attempt to record or edit was made on the recordable disc with its rewrite protection click being in rewrite preventing state. • An attempt was made to edit the track which was write-protected by information written in UTOC.	• Return the careless erase preventing tab to its initial position, and redo. • The track on which an attempt to edit was made is a write-protected track. Redo on another track.
Can't EDIT	• Specific editing conditions were not satisfied. proper. Redo, applying the ocrrect procedure.	• The applied operation procedure is not
TEMP OVER	• Owing to occurrence of some trouble internal temperature of set (MD unit) rose excessively. is too high.	• Check by troubleshooting. • Check whether the ambient temperature
DISC ERR RD PA WR	• Read data was not correct or data could not be read correctly. • Trouble occurred during recording if music data, resulting in record failure.	• Data of TOC or UTOC is not normal or disc las flaw. Replace the disc with other disc.
TOC ERR S TOC ERR R TOC ERR T	• TOC was read but data was not correct. • TOC could not be read.	• The TOC information recorded on disc does not conform to the MD standard. Replace the disc with other disc. • The disc has flaw. Replace the disc with other disc.
UTOC W ERR	• Trouble occurred during rewriting of UTOC, resulting in UTOC rewriting failure.	• The disc has flaw. Replace the disc with other disc.
FOCUS ERROR	• After the disc was loaded, focusing failure occurred. dust, fingerprint and black spot. Check for disc disalignment and run-out.	• Check that the disc is free from flaw,
BLANK MD	• UTOC was read but total TNO and the number of characters of NAME was 0?	• Perform recording to check that the disc is recordable disc.

Error display	Errors	Corrective action
DEFECT	• Focusing error was caused by shock during REC-PLAY.	• Check that the disc is free from flaw, dust, fingerprint and black spot. Check for disc disalignment and run-out.
TOC W ERROR	• Although UTOC can be read but UTOC cannot be rewritten.	• Check that the record head contact is normal. Check that there is no broken wire between PWB and the recording head.
MD ERROR	• Data of EEPROOM is not correct. • Auto pre-adjustment is not complated.	• Prefrom AUTO pre-adjustment. • Once reset, and redo. If error occurs persistently, replace EEPROM.

EXPLANATION OF MECHANISM ERROR

Error display	Errors
M E C H A _ E R R 1 _ *	Ejection failure
M E C H A _ E R R 2 _ *	Head-up failure
M E C H A _ E R R 3 _ *	Head-down failure

	HINF (IC1401 97 PIN)
* = E Ejection completion position	< 1.3 V
* = M Horizontal midway position	> 3.06 V
* = L Load completed position	1.853~2.48 V
* = D Head-down position	1.3~1.853 V

● E²-PROM (IC402) writing procedure

1. Procedure to replace E²-PROM and to write the initial value of microcomputer in E²-PROM

(1) Replace E²-PROM.
(2) Refer to the latest E²-PROM data list.
(3) Holding down the ENTER button and MD PLAY button,RESET button, and start up the test mode.
Press the MD STOP button.
(4) Indication of version.

[t s m○○○○ e ○○]
E²-PROM version (01~)
Microcomputer ROM version
Model code

(5) Set the temperature reference value.
(Refer to "Temperature reference setting procedure".)
(6) Press the ENTER button 7 times.
[EEPROM SET]
(7) Perform the operation shown in the "E²-PROM setting mode chart", compare the indication with the E²-PROM data list, and make a setting according to the E²-PROM data list, using JOG key.
(8) The setting must conform to the E²-PROM data list.
(9) Perform the AUTO per-adjustment and the AUTO adjustment.
(10) Turn off power supply to write in E²-PROM.

2. Temperature reference value setting procedure (to be executed at room temperature within 21 to 29°C)

(1) Test mode stop state.
[t s m○○○○ e ○○]
(2) Crrect temperature depending on ambient temperature according to the following table.

Ambient temperature (°C)	Temperature correction
12.2 ~ 15.8	-3
15.9 ~ 19.6	-2
19.7 ~ 23.3	-1
23.2 ~ 26.8	0
26.9 ~ 30.7	+1
30.8 ~ 34.3	+2
34.4 ~ 37.9	+3

An example: When ambient temperature is 22°C and meadured temperature is 73H
Temperature setting = 73 H - 01 H
= 72 H
* When the measured temperature fluctuates between two values, take lower one (if temperature fluctuates between 73H and 72H, take 72H).

(3) Press the ENTER button 7 times.
[EEPROM SET]
(4) Press the MD PLAY button.
[FOCUS]
(5) Press the ENTER button 4 times.
[Temp]
(6) Press once the MD PLAY button.
[TEMP ○○ ◆◆]
○○ : Measured temperature, ◆◆ : Temperature setting
(7) Set temperature to the value determined above, using the JOG button.
(8) Press the MD STOP button.
[Temp]

● E²-PROM Data List

Focus setting

Item indication	Initial Setting
FG ○○	97H
FF1 ○○	9EH
FF2 ○○	E0H
FZHLEV ○○	EDH
FOKLEVn ○○	08H
FOKLEVf ○○	08H
FOKLPFn ○○	00H
FOKLPFf ○○	88H
WAITf ○○	90H

Spin setting

Item indication	Initial Setting
SPG ○○	20H
SPG—in ○○	B8H
SPG—mid ○○	76H
SPG—out ○○	50H
SP1 ○○	10H
SP2 ○○	87H
SP3 ○○	E3H
SP4 ○○	E3H
SP5 ○○	10H
SPDLIM ○○	78H

Tracking setting

Item indication	Initial Setting
TG ○○	45H
TF1 ○○	70H
TF2 ○○	E0H
SVCNT4 ○○	01H
TRBLVo ○○	53H
TRBLVt ○○	60H
TRKLVo ○○	4CH
TRKLVt ○○	38H
TDPWo ○○	89H
TDPWt ○○	1AH
SLCTo ○○	00H
SLCTt ○○	40H
SLCTm ○○	53H
TCRSCIP ○○	16H
COTLVP ○○	14H
COTLVr ○○	28H
WAITm ○○	FFH

Slide setting

Item indication	Initial Setting
SLG ○○	35H
SL2 ○○	27H
SLDLIM ○○	65H
SLDLEV ○○	16H
SLKLVk ○○	55H
SLKLVt ○○	3AH
SLKLVm ○○	55H

Control setting

Item indication	Initial Setting
CONTRL1 ○○	80H
CONTRL2 ○○	02H
SPKLEVm ○○	26H
ADJTTM ○○	14H
HDEQAD ○○	90H
LDEQAD ○○	8FH
GDEQAD ○○	91H
HDEQBC ○○	90H
LDEQBC ○○	8FH
GDEQBC ○○	8AH
HALSG ○○	21H
LALSG ○○	21H
GALSG ○○	21H
HALSOFS ○○	FEH
LALSOFS ○○	00H
GALSOFS ○○	00H

Adjust setting

Item indication	Initial Setting
COK ○○	A0H
FAT ○○	C0H
TAT ○○	3EH
CAT ○○	20H
FAB ○○	64H
STR ○○	0AH
SFS ○○	0DH
STC ○○	0DH

● E²-PROM Setting Mode Chart

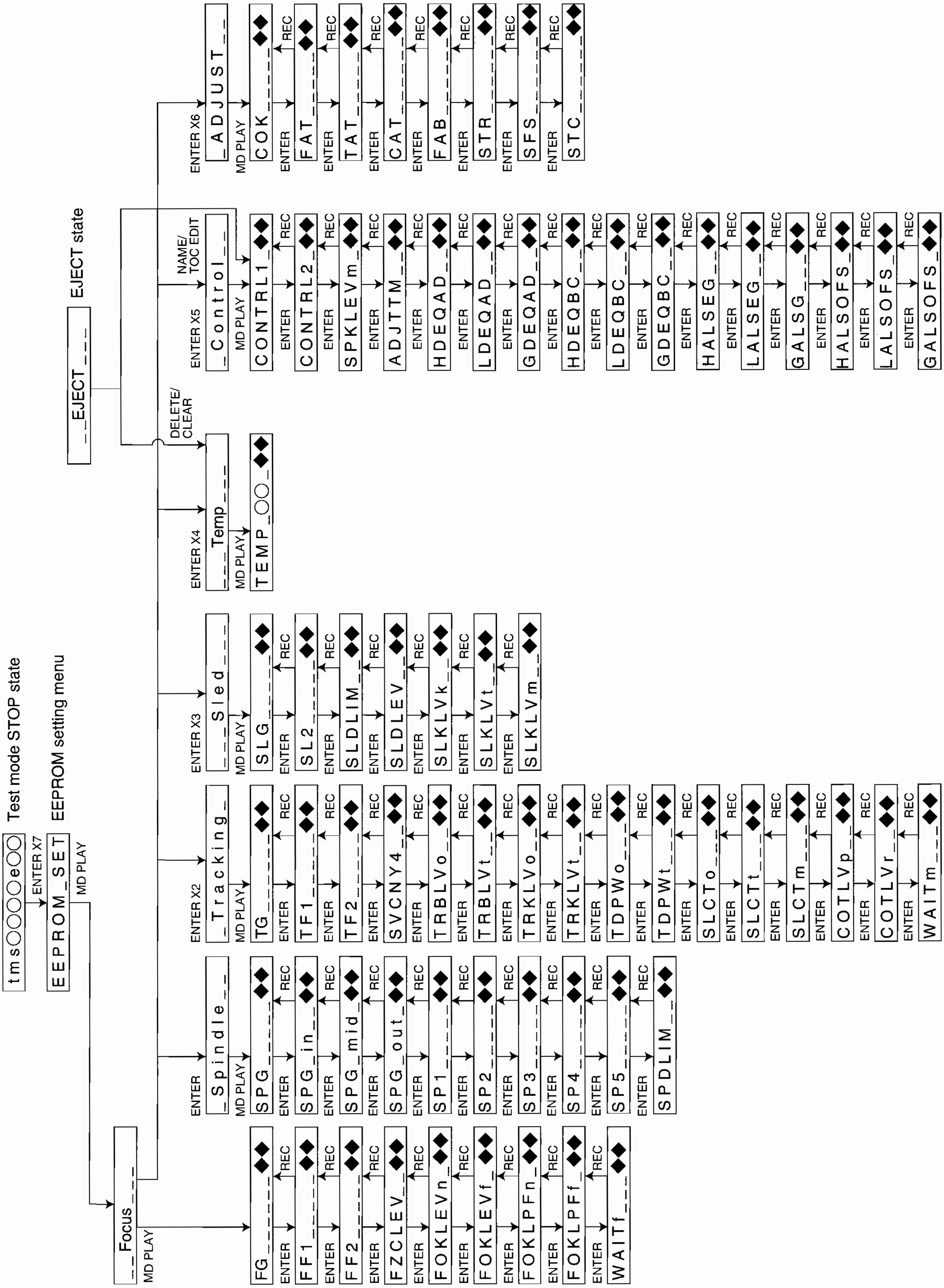
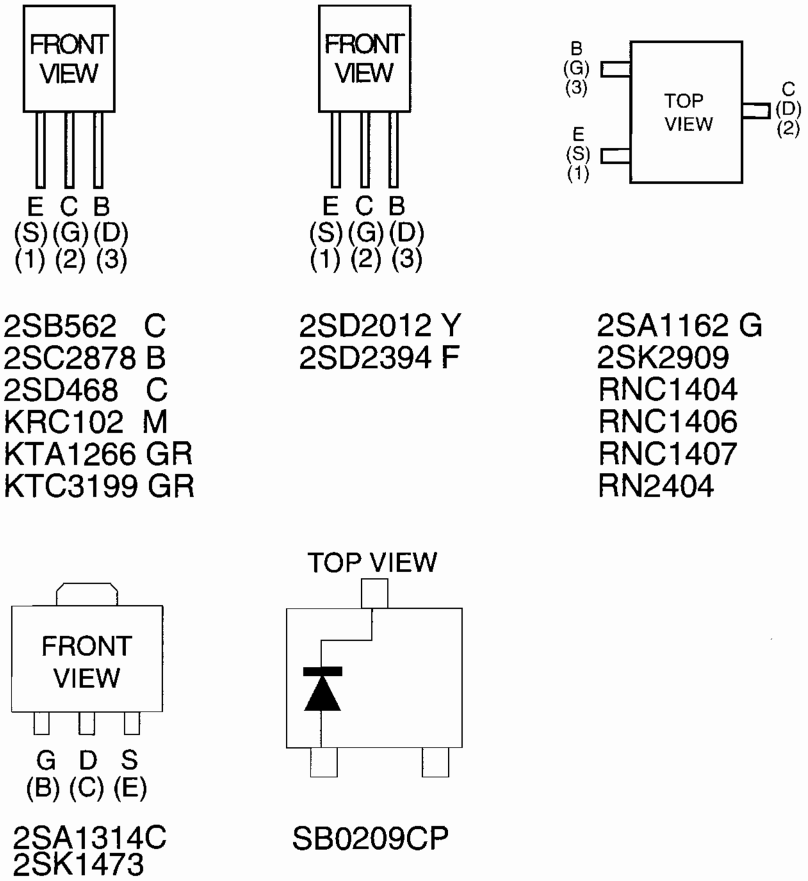

tms○○○e○○
ENTER X7
EEPROM_SET
Test mode STOP state
EEPROM setting menu
MD PLAY
__EJECT___
EJECT state
DELETE/CLEAR
NAME/TOC EDIT
ENTER X6
_ADJUST__
MD PLAY
COK
FAT
TAT
CAT
FAB
STR
SFS
STC
ENTER
REC
◆◆
ENTER X5
_Control__
CONTRL1
CONTRL2
SPKLEVm
ADJTTM
HDEQAD
LDEQAD
GDEQAD
HDEQBC
LDEQBC
GDEQBC
HALSEG
LALSEG
GALSG
HALSOFS
LALSOFS
GALSOFS
ENTER X4
___Temp___
TEMP_○○
ENTER X3
___Sled___
SLG
SL2
SLDLIM
SLDLEV
SLKLVk
SLKLVt
SLKLVm
ENTER X2
Tracking
TG
TF1
TF2
SVCNY4
TRBLVo
TRBLVt
TRKLVo
TRKLVt
TDPWo
TDPWt
SLCTo
SLCTt
SLCTm
COTLVp
COTLVr
WAITm
_Spindle__
SPG
SPG_in
SPG_mid
SPG_out
SP1
SP2
SP3
SP4
SP5
SPDLIM
__Focus___
FG
FF1
FF2
FZCLEV
FOKLEVn
FOKLEVf
FOKLPFn
FOKLPFf
WAITf

Figure 22

NOTES ON SCHEMATIC DIAGRAM

- Resistor:
  To differentiate the units of resistors, such symbol as K and M are used: the symbol K means 1000 ohm and the symbol M means 1000 kohm and the resistor without any symbol is ohm-type resistor. Besides, the one with “Fusible” is a fuse type.
- Capacitor:
  To indicate the unit of capacitor, a symbol P is used: this symbol P means micro-micro-farad and the unit of the capacitor without such a symbol is microfarad. As to electrolytic capacitor, the expression “capacitance/withstand voltage” is used.
  (CH), (TH), (RH), (UJ): Temperature compensation
  (ML): Mylar type
  (P.P.): Polypropylene type
- Schematic diagram and Wiring Side of P.W.Board for this model are subject to change for improvement without prior notice.
- The indicated voltage in each section is the one measured by Digital Multimeter between such a section and the chassis with no signal given.
  1. In the tuner section,
     ( ) indicates AM
     < > indicates FM stereo
  2. In the main section, a tape is being played back.
  3. In the deck section, a tape is being played back.
     ( ) indicates the record state.
  4. In the power section, a tape is being played back.
  5. In the CD section, the CD is stopped.
- Parts marked with “ ⚠ ” ([= = =]) are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

REF. NO	DESCRIPTION	POSITION
SW501	RESET	ON—OFF
SW901	JOG	ON—OFF
SW950	POWER	ON—OFF
SW951	PLAY/PAUSE	ON—OFF
SW952	STOP	ON—OFF
SW953	REC	ON—OFF
SW954	TRACKING UP/CUE	ON—OFF
SW955	EJECT	ON—OFF
SW956	ENTER	ON—OFF
SW957	NAME • TOC EDIT	ON—OFF
SW958	TIMER/DELETE	ON—OFF
SW959	DISPLAY/CHARACTER	ON—OFF
SW960	TRACKING DOWN/REVIEW	ON—OFF
SW961	INPUT SELECT	ON—OFF
SW1952	DIRECT	ON—OFF
SW1953	LEAD IN	ON—OFF
SW1954	PLAY	ON—OFF
SW1955	REC.	ON—OFF
SW1956	LOADING	ON—OFF



2SB562 C
2SC2878 B
2SD468 C
KRC102 M
KTA1266 GR
KTC3199 GR

2SD2012 Y
2SD2394 F

2SA1162 G
2SK2909
RNC1404
RNC1406
RNC1407
RN2404

2SA1314C
2SK1473

SB0209CP

Figure 23 TYPES OF TRANSISTOR AND LED

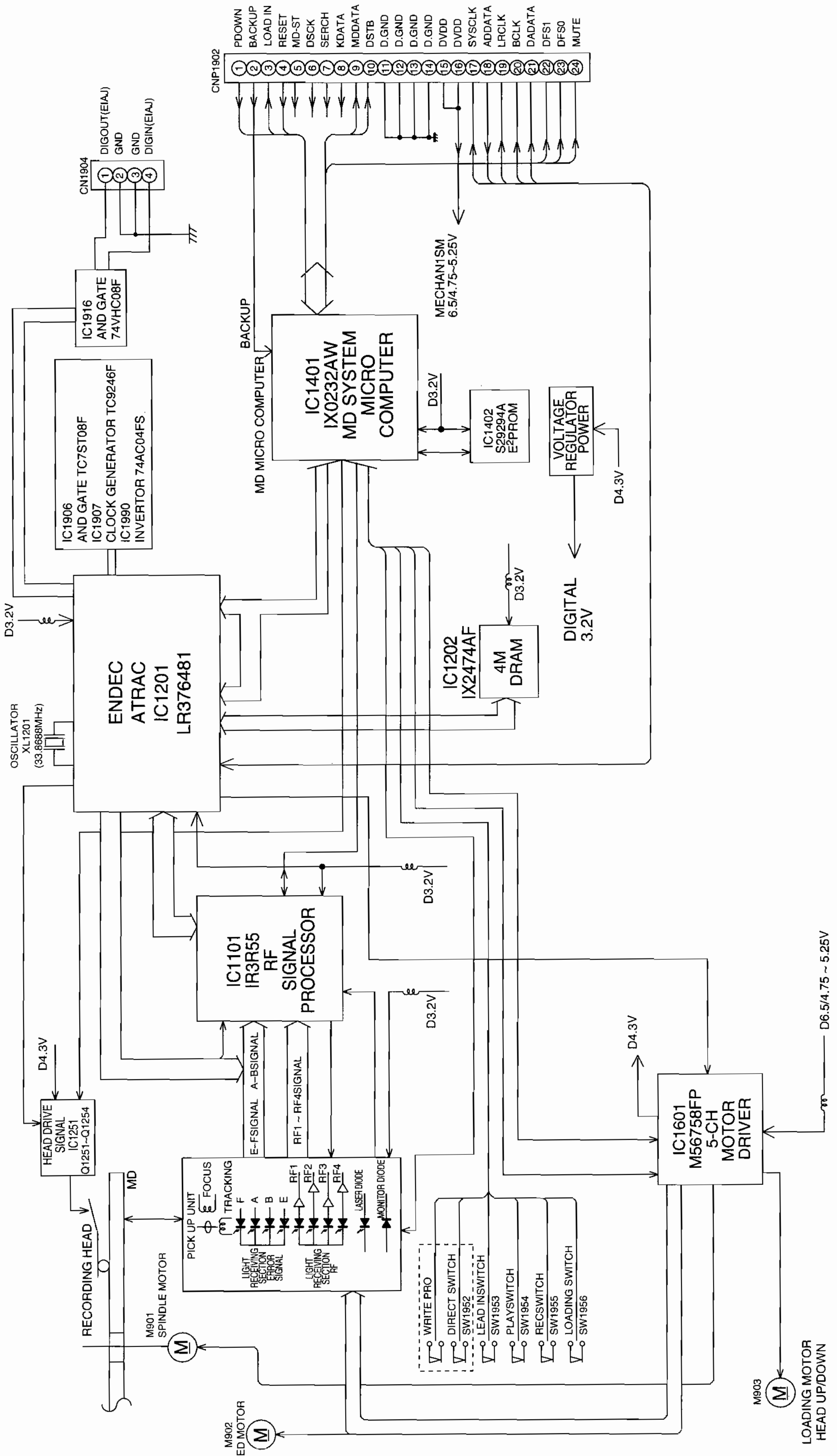

CNP1902
① PDOWN
② BACKUP
③ LOAD IN
④ RESET
⑤ MD-ST
⑥ DSCK
⑦ SERCH
⑧ KDATA
⑨ MDDATA
⑩ DSTB
⑪ D.GND
⑫ D.GND
⑬ D.GND
⑭ D.GND
⑮ DVDD
⑯ DVDD
⑰ SYSCLK
⑱ ADDATA
⑲ LRCLK
⑳ BCLK
㉑ DADATA
㉒ DFS1
㉓ DFS0
㉔ MUTE
CN1904
① DIGOUT(EIAJ)
② GND
③ GND
④ DIGIN(EIAJ)
IC1916
AND GATE
74VHC08F
IC1906
AND GATE TC7ST08F
IC1907
CLOCK GENERATOR TC9246F
IC1990
INVERTOR 74AC04FS
BACKUP
MD MICRO COMPUTER
IC1401
IX0232AW
MD SYSTEM
MICRO
COMPUTER
MECHAN1SM
6.5/4.75~5.25V
D3.2V
IC1402
S29294A
E²PROM
VOLTAGE
REGULATOR
POWER
D4.3V
DIGITAL
3.2V
D3.2V
IC1202
IX2474AF
4M
DRAM
D3.2V
OSCILLATOR
XL1201
(33.8688MHz)
ENDEC
ATRAC
IC1201
LR376481
D3.2V
IC1101
IR3R55
RF
SIGNAL
PROCESSOR
D3.2V
D6.5/4.75 ~ 5.25V
D4.3V
IC1601
M56758FP
5-CH
MOTOR
DRIVER
D4.3V
HEAD DRIVE
SIGNAL
IC1251
Q1251~Q1254
E~FSIGNAL
A~BSIGNAL
RF1 ~ RF4SIGNAL
PICK UP UNIT
FOCUS
TRACKING
F
A
B
E
RF1
RF2
RF3
RF4
LASER DIODE
MONITOR DIODE
LIGHT RECEIVING SECTION ERROR SIGNAL
LIGHT RECEIVING SECTION RF
MD
RECORDING HEAD
M901
SPINDLE MOTOR
WRITE PRO
DIRECT SWITCH
SW1952
LEAD INSWITCH
SW1953
PLAYSWITCH
SW1954
RECSWITCH
SW1955
LOADING SWITCH
SW1956
M902
SLED MOTOR
M903
LOADING MOTOR
HEAD UP/DOWN

Figure 24 BLOCK DIAGRAM (1/2)

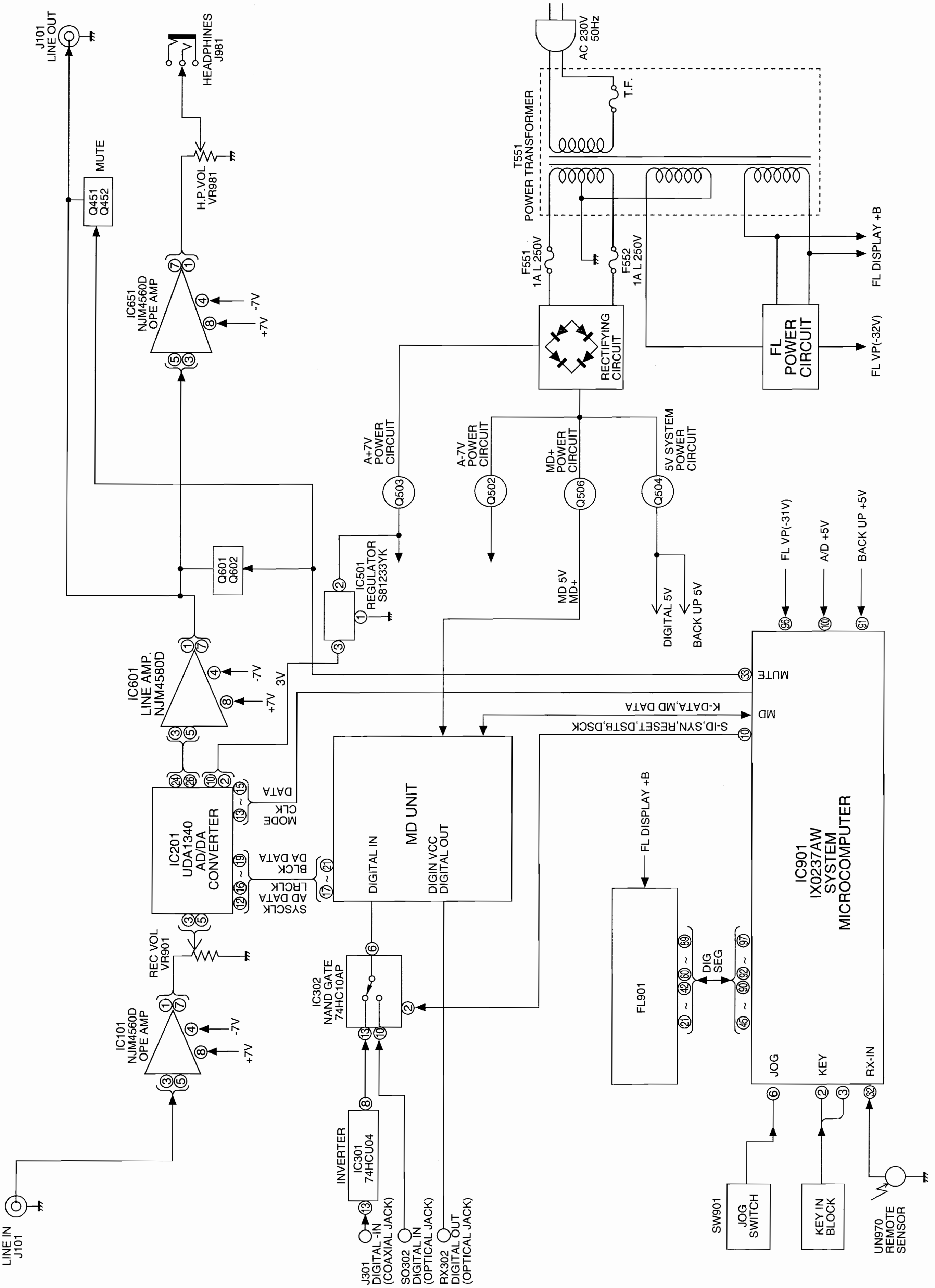
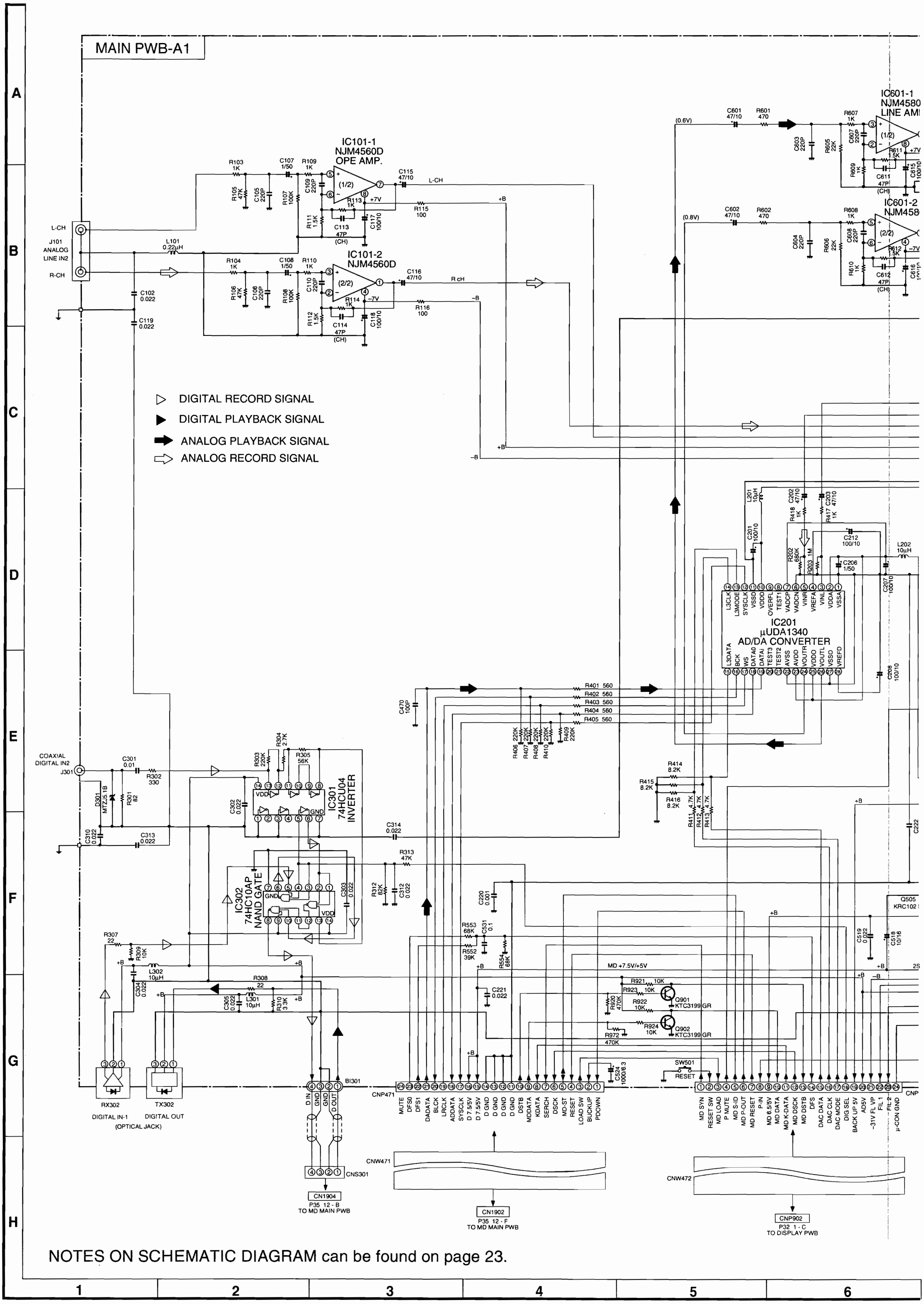
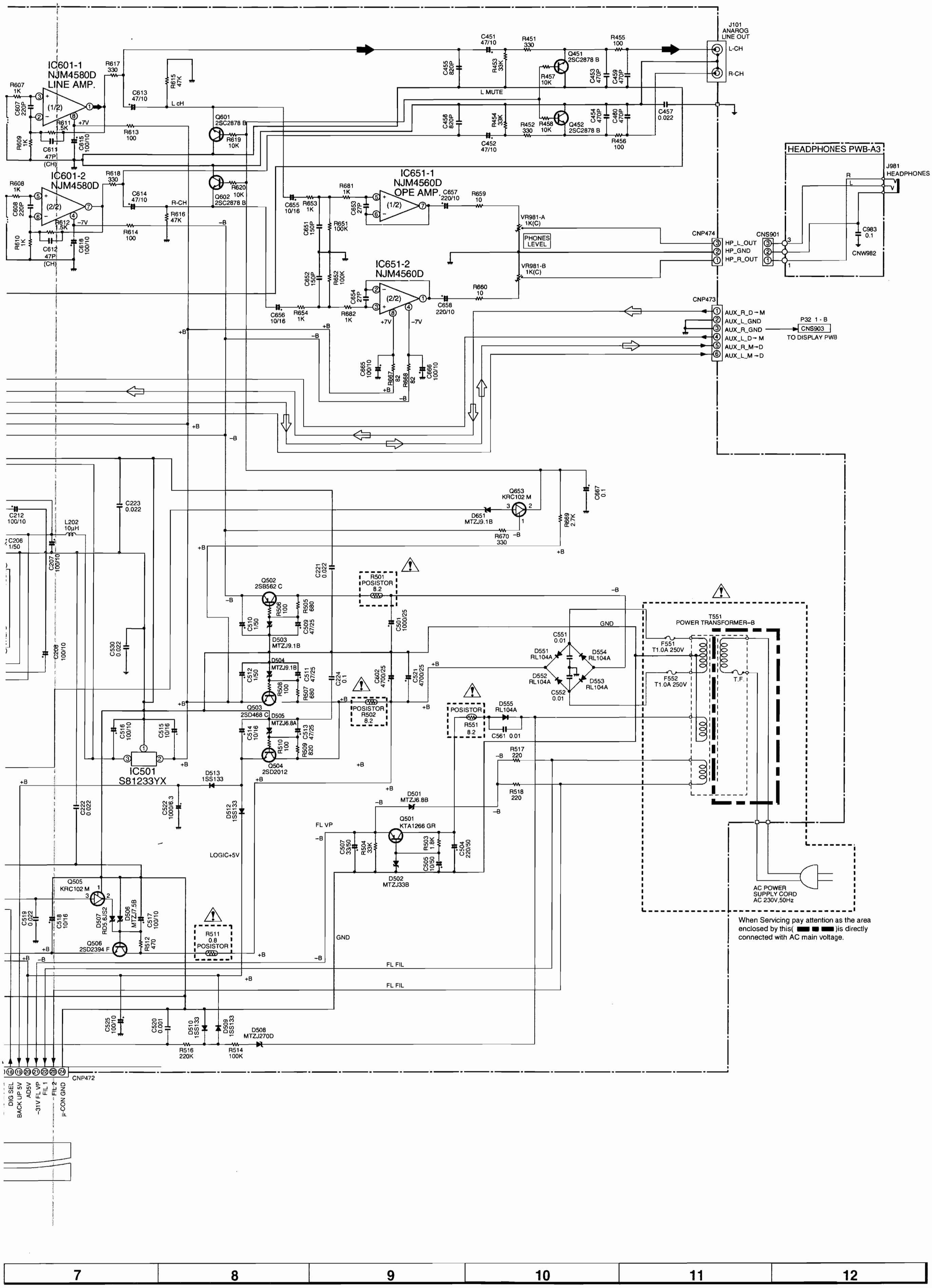

J101 LINE OUT
HEADPHINES J981
MUTE
Q451 Q452
H.P.VOL VR981
IC651 NJM4560D OPE AMP
-7V
+7V
Q601 Q602
IC601 LINE AMP. NJM4580D
3V
IC201 UDA1340 AD/DA CONVERTER
DATA
CLK
MODE
DA DATA
BLCK
LRCLK
AD DATA
SYSCLK
REC VOL VR901
IC101 NJM4560D OPE AMP
LINE IN J101
A+7V POWER CIRCUIT
Q503
IC501 REGULATOR S81233YK
A-7V POWER CIRCUIT
Q502
MD+ POWER CIRCUIT
Q506
MD 5V MD+
5V SYSTEM POWER CIRCUIT
Q504
DIGITAL 5V
BACK UP 5V
MD UNIT
DIGITAL IN
DIGIN VCC
DIGITAL OUT
IC302 NAND GATE 74HC10AP
INVERTER IC301 74HCU04
J301 DIGITAL -IN (COAXIAL JACK)
SO302 DIGITAL IN (OPTICAL JACK)
RX302 DIGITAL OUT (OPTICAL JACK)
AC 230V 50Hz
T.F.
T551 POWER TRANSFORMER
F551 1A L 250V
F552 1A L 250V
RECTIFYING CIRCUIT
FL POWER CIRCUIT
FL DISPLAY +B
FL VP(-32V)
FL VP(-31V)
A/D +5V
BACK UP +5V
MUTE
MD
K-DATA,MD DATA
S-ID,SYN,RESET,DSTB,DSCK
FL DISPLAY +B
FL901
DIG
SEG
IC901 IX0237AW SYSTEM MICROCOMPUTER
JOG
KEY
RX-IN
SW901
JOG SWITCH
KEY IN BLOCK
UN970 REMOTE SENSOR

Figure 25 BLOCK DIAGRAM (2/2)


MAIN PWB-A1
A
B
C
D
E
F
G
H
1
2
3
4
5
6
IC101-1
NJM4560D
OPE AMP.
IC101-2
NJM4560D
IC601-1
NJM4580
LINE AMP
IC601-2
NJM458
L-CH
R CH
J101
ANALOG
LINE IN2
R-CH
L101
0.22μH
C102
0.022
C119
0.022
(0.6V)
(0.8V)
▷ DIGITAL RECORD SIGNAL
▶ DIGITAL PLAYBACK SIGNAL
ANALOG PLAYBACK SIGNAL
ANALOG RECORD SIGNAL
IC201
μUDA1340
AD/DA CONVERTER
L3CLK
L3MODE
SYSCLK
VSSD
VDDD
OVERFL
TEST1
VADCP
VADCN
VINR
VREFA
VINL
VDDA
VSSA
L3DATA
BCK
WS
DATAO
DATAI
TEST3
TEST2
AVSS
AVDD
VOUTR
VDDO
VOUTL
VSSO
VREFD
R401 560
R402 560
R403 560
R404 560
R405 560
COAXIAL
DIGITAL IN2
J301
D301
MTZJ5.1B
IC301
74HCU04
INVERTER
IC302
74HC10AP
NAND GATE
RX302
TX302
DIGITAL IN-1
DIGITAL OUT
(OPTICAL JACK)
BI301
D IN
GND
GND
D OUT
CNP471
MUTE
DFS0
DFS1
DADATA
BLCK
LRCLK
ADDATA
SYSCLK
D 7.5/5V
D 7.5/5V
D GND
D GND
D GND
D GND
D GND
DSTB
MDDATA
KDATA
SERCH
DSCK
MD-ST
RESET
LOAD SW
BUCKUP
PDOWN
MD +7.5V/+5V
Q901
KTC3199GR
Q902
KTC3199GR
SW501
RESET
Q505
KRC102
MD SYN
RESET SW
MD LOAD
P. MUTE
MD S-ID
MD P-OUT
MD RESET
P-IN
MD 6.5/5V
MD DATA
MD K-DATA
MD DSCK
MD DSTB
DFS
DAC DATA
DAC CLK
DAC MODE
DIG SEL
BACK UP 5V
AD5V
-31V FL VP
FIL 1
FIL 2
μ-CON GND
CNW471
CNW472
CNS301
CN1904
P35 12 - B
TO MD MAIN PWB
CN1902
P35 12 - F
TO MD MAIN PWB
CNP902
P32 1 - C
TO DISPLAY PWB

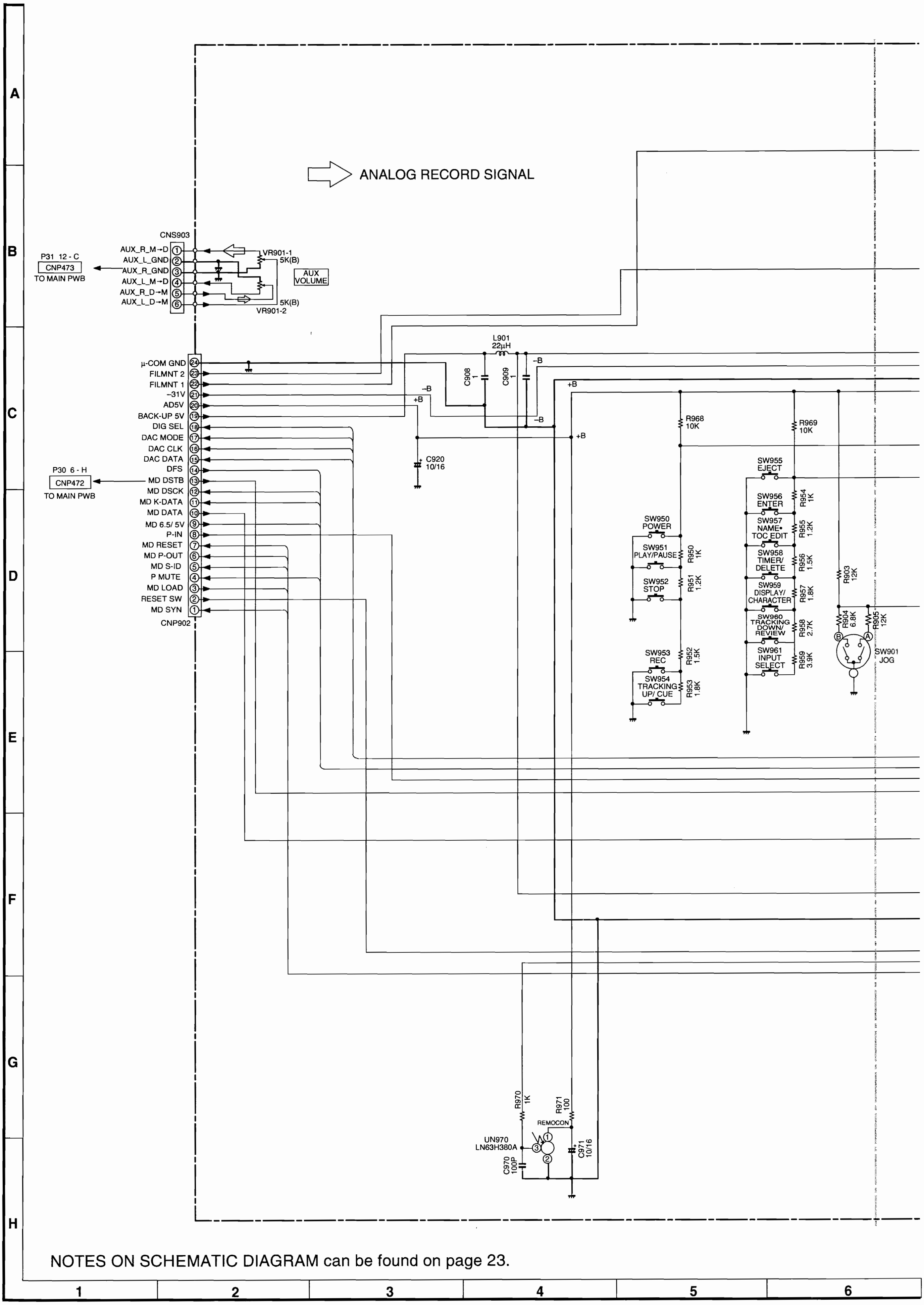
NOTES ON SCHEMATIC DIAGRAM can be found on page 23.

Figure 26 SCHEMATIC DIAGRAM (1/6)


J101
ANAROG
LINE OUT
L-CH
R-CH
C451
47/10
R451
330
R455
100
Q451
2SC2878 B
C455
820P
R453
33K
R457
10K
C453
470P
C459
470P
L MUTE
C457
0.022
C458
820P
R454
33K
R452
330
R458
10K
Q452
2SC2878 B
C454
470P
C460
470P
C452
47/10
R456
100
IC601-1
NJM4580D
LINE AMP.
R617
330
C613
47/10
R615
47K
L cH
R607
1K
C607
220P
(1/2)
R611
1.5K
+7V
R613
100
R609
1K
C611
47P
(CH)
C615
100/10
Q601
2SC2878 B
R619
10K
IC601-2
NJM4580D
R618
330
C614
47/10
R-CH
R616
47K
R608
1K
C608
220P
(2/2)
R612
1.5K
-7V
R614
100
R610
1K
C612
47P
(CH)
C616
100/10
R620
10K
Q602
2SC2878 B
HEADPHONES PWB-A3
J981
HEADPHONES
IC651-1
NJM4560D
OPE AMP.
R681
1K
C657
220/10
R659
10
C655
10/16
R653
1K
C653
27P
(1/2)
C651
150P
R651
100K
VR981-A
1K(C)
PHONES
LEVEL
CNP474
HP_L_OUT
HP_GND
HP_R_OUT
CNS901
C983
0.1
CNW982
IC651-2
NJM4560D
VR981-B
1K(C)
C652
150P
R652
100K
C654
27P
(2/2)
R660
10
C658
220/10
C656
10/16
R654
1K
R682
1K
+7V
-7V
CNP473
AUX_R_D→M
AUX_L_GND
AUX_R_GND
AUX_L_D→M
AUX_R_M→D
AUX_L_M→D
P32 1-B
CNS903
TO DISPLAY PWB
C665
100/10
R667
82
R668
82
C666
100/10
+B
-B
Q653
KRC102 M
D651
MTZJ9.1B
R669
2.7K
R670
330
C667
0.1
C223
0.022
C212
100/10
L202
10µH
C206
1/50
C207
100/10
C208
100/10
C530
0.022
C221
0.022
R501
POSISTOR
8.2
Q502
2SB562 C
R506
100
R505
680
C510
1/50
C509
47/25
C501
1000/25
D503
MTZJ9.1B
D504
MTZJ9.1B
C512
1/50
C511
47/25
R508
100
R507
680
C224
0.1
C602
4700/25
C521
4700/25
Q503
2SD468 C
R502
POSISTOR
8.2
D505
MTZJ6.8A
C514
10/16
C513
47/25
R510
100
R509
820
Q504
2SD2012
C516
100/10
C515
10/16
IC501
S81233YX
D513
1SS133
C522
1000/6.3
D512
1SS133
LOGIC+5V
C222
0.022
GND
C551
0.01
D551
RL104A
D554
RL104A
D552
RL104A
D553
RL104A
C552
0.01
POSISTOR
R551
8.2
D555
RL104A
C561 0.01
R517
220
R518
220
D501
MTZJ6.8B
Q501
KTA1266 GR
FL VP
C507
33/50
R504
33K
R503
1.8K
C505
10/50
C504
220/50
D502
MTZJ33B
T551
POWER TRANSFORMER-B
F551
T1.0A 250V
F552
T1.0A 250V
T.F.
AC POWER
SUPPLY CORD
AC 230V,50Hz
Q505
KRC102 M
C519
0.022
C518
10/16
D507
RD5.6JS2
D506
MTZJ7.5B
C517
100/10
Q506
2SD2394 F
R512
470
R511
0.8
POSISTOR
FL FIL
FL FIL
C525
100/10
C520
0.001
D510
1SS133
D509
1SS133
D508
MTZJ270D
R516
220K
R514
100K
CNP472
DIG SEL
BACK UP 5V
AD5V
-31V FL VP
FIL 1
FIL 2
µ-CON GND
7
8
9
10
11
12

When Servicing pay attention as the area enclosed by this(▬ ▬ ▬)is directly connected with AC main voltage.

Figure 27 SCHEMATIC DIAGRAM (2/6)


A
B
C
D
E
F
G
H
1
2
3
4
5
6
ANALOG RECORD SIGNAL
CNS903
P31 12 - C
CNP473
TO MAIN PWB
AUX_R_M→D ①
AUX_L_GND ②
AUX_R_GND ③
AUX_L_M→D ④
AUX_R_D→M ⑤
AUX_L_D→M ⑥
VR901-1
5K(B)
AUX VOLUME
5K(B)
VR901-2
L901
22μH
C908
1
C909
1
–B
+B
–B
+B
–B
+B
C920
10/16
μ-COM GND ㉔
FILMNT 2 ㉓
FILMNT 1 ㉒
–31V ㉑
AD5V ⑳
BACK-UP 5V ⑲
DIG SEL ⑱
DAC MODE ⑰
DAC CLK ⑯
DAC DATA ⑮
DFS ⑭
MD DSTB ⑬
MD DSCK ⑫
MD K-DATA ⑪
MD DATA ⑩
MD 6.5/ 5V ⑨
P-IN ⑧
MD RESET ⑦
MD P-OUT ⑥
MD S-ID ⑤
P MUTE ④
MD LOAD ③
RESET SW ②
MD SYN ①
CNP902
P30 6 - H
CNP472
TO MAIN PWB
R968
10K
R969
10K
SW955
EJECT
SW956
ENTER
R954
1K
SW957
NAME•
TOC EDIT
R955
1.2K
SW958
TIMER/
DELETE
R956
1.5K
SW959
DISPLAY/
CHARACTER
R957
1.8K
SW960
TRACKING
DOWN/
REVIEW
R958
2.7K
SW961
INPUT
SELECT
R959
3.9K
SW950
POWER
SW951
PLAY/PAUSE
R950
1K
SW952
STOP
R951
1.2K
SW953
REC
R952
1.5K
SW954
TRACKING
UP/ CUE
R953
1.8K
R903
12K
R904
6.8K
R905
12K
Ⓑ
Ⓐ
SW901
JOG
R970
1K
R971
100
REMOCON
UN970
LN63H380A
①
②
③
C970
100P
C971
10/16

NOTES ON SCHEMATIC DIAGRAM can be found on page 23.

Figure 28 SCHEMATIC DIAGRAM (3/6)

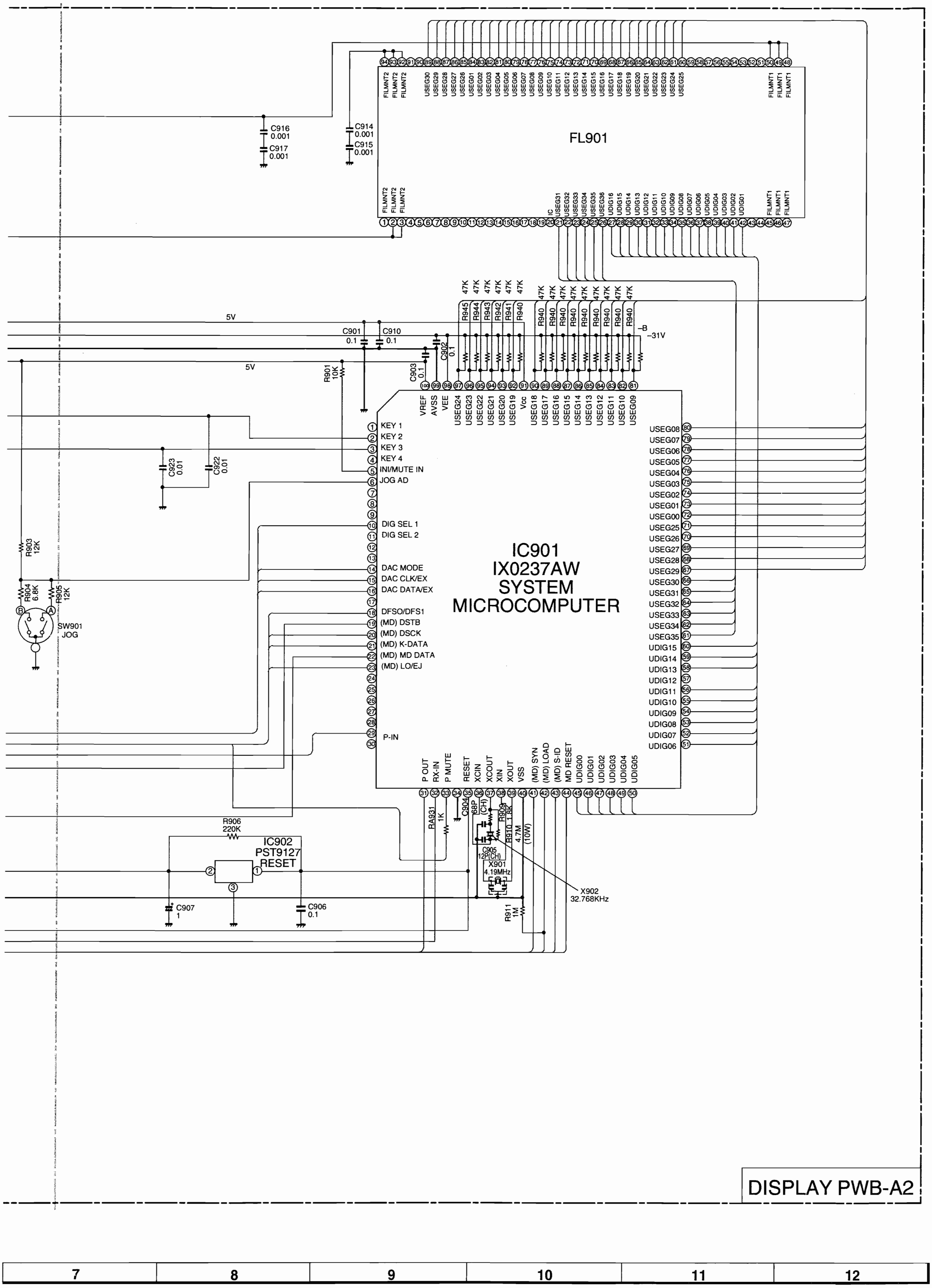
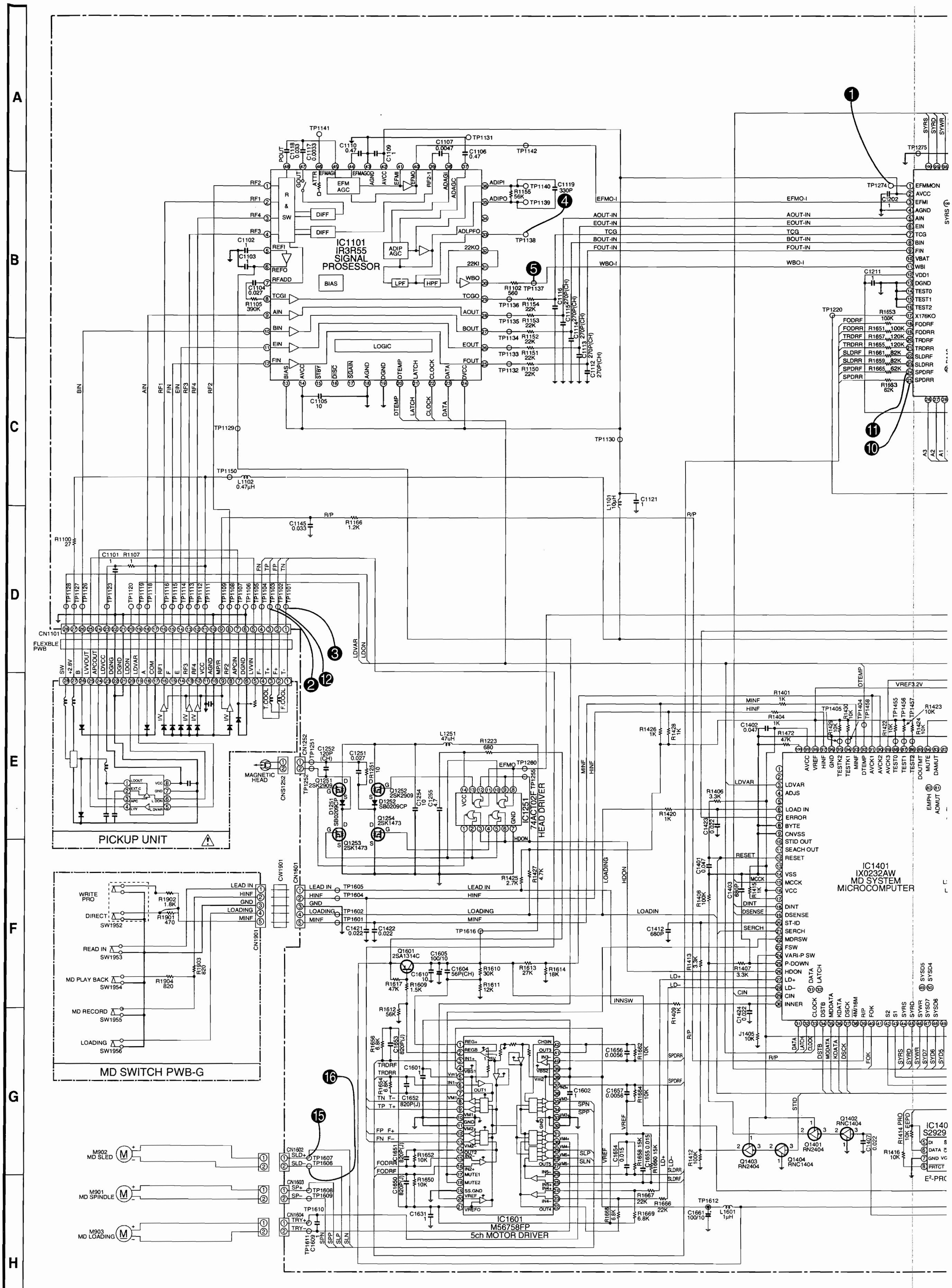
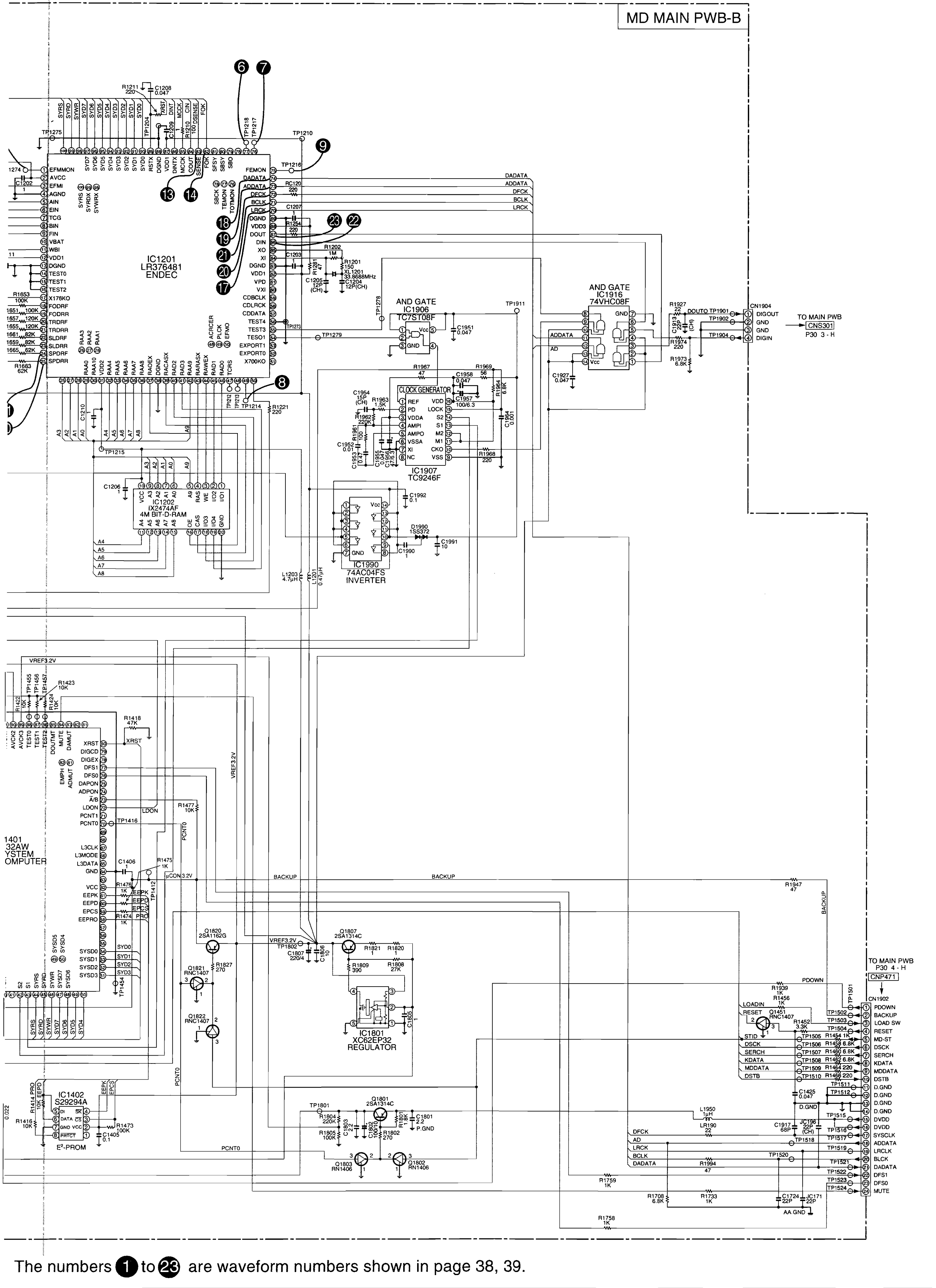

FL901
FILMNT2
FILMNT1
USEG30
USEG29
USEG28
USEG27
USEG26
USEG01
USEG02
USEG03
USEG04
USEG05
USEG06
USEG07
USEG08
USEG09
USEG10
USEG11
USEG12
USEG13
USEG14
USEG15
USEG16
USEG17
USEG18
USEG19
USEG20
USEG21
USEG22
USEG23
USEG24
USEG25
IC
USEG31
USEG32
USEG33
USEG34
USEG35
USEG36
UDIG16
UDIG15
UDIG14
UDIG13
UDIG12
UDIG11
UDIG10
UDIG09
UDIG08
UDIG07
UDIG06
UDIG05
UDIG04
UDIG03
UDIG02
UDIG01
C916 0.001
C917 0.001
C914 0.001
C915 0.001
5V
C901 0.1
C910 0.1
C902 0.1
C903 0.1
R901 10K
R945 47K
R944 47K
R943 47K
R942 47K
R941 47K
R940 47K
–B
–31V
IC901
IX0237AW
SYSTEM
MICROCOMPUTER
VREF
AVSS
VEE
Vcc
KEY 1
KEY 2
KEY 3
KEY 4
INI/MUTE IN
JOG AD
DIG SEL 1
DIG SEL 2
DAC MODE
DAC CLK/EX
DAC DATA/EX
DFSO/DFS1
(MD) DSTB
(MD) DSCK
(MD) K-DATA
(MD) MD DATA
(MD) LO/EJ
P-IN
P OUT
RX-IN
P MUTE
RESET
XCIN
XCOUT
XIN
XOUT
VSS
(MD) SYN
(MD) LOAD
(MD) S-ID
MD RESET
UDIG00
C923 0.01
C922 0.01
R903 12K
R904 6.8K
R905 12K
SW901 JOG
R906 220K
IC902
PST9127
RESET
C907 1
C906 0.1
RA831 1K
C904 68P (CH)
R909 1.8K
R910 4.7M (10W)
C905 12P(CH)
X901 4.19MHz
X902 32.768KHz
R911 1M
DISPLAY PWB-A2
7
8
9
10
11
12

Figure 29 SCHEMATIC DIAGRAM (4/6)


A
B
C
D
E
F
G
H
IC1101
IR3R55
SIGNAL
PROSESSOR
EFM AGC
DIFF
BIAS
LOGIC
LPF
HPF
ADIP AGC
TP1141
TP1131
TP1142
TP1138
TP1137
TP1129
TP1130
TP1150
L1102 0.47µH
C1145 0.033
R1166 1.2K
R/P
CN1101
FLEXBLE PWB
PICKUP UNIT
MAGNETIC HEAD
CN1252
Q1251 2SK2909
Q1252 2SK2909
Q1253 2SK1473
Q1254 2SK1473
D1251 SB0209CP
D1252 SB0209CP
IC1251
74AC02F
HEAD DRIVER
L1251 47µH
R1223 680
EFMO
HDON
MD SWITCH PWB-G
WRITE PRO
DIRECT
SW1952
READ IN SW1953
MD PLAY BACK SW1954
MD RECORD SW1955
LOADING SW1956
R1902 1.8K
R1901 470
R1903 820
R1904 820
CN1901
CW1901
CN1601
LEAD IN
HINF
GND
LOADING
MINF
TP1605
TP1604
TP1602
TP1601
TP1616
Q1601 2SA1314C
IC1601
M56758FP
5ch MOTOR DRIVER
M902 MD SLED
M901 MD SPINDLE
M903 MD LOADING
CN1602
CN1603
CN1604
TP1607
TP1606
TP1608
TP1609
TP1610
TP1611
TP1612
L1601 1µH
IC1401
IX0232AW
MD SYSTEM
MICROCOMPUTER
VREF3.2V
Q1401 RN2404
Q1402 RNC1404
Q1403 RN2404
Q1404 RNC1404
IC140
S2929
E²-PRO
TP1274
TP1275
TP1220
EFMO-I
AOUT-IN
EOUT-IN
TCG
BOUT-IN
FOUT-IN
WBO-I
1
2
3
4
5
6

NOTES ON SCHEMATIC DIAGRAM can be found on page 23.

Figure 30 SCHEMATIC DIAGRAM (5/6)


MD MAIN PWB-B
IC1201
LR376481
ENDEC
IC1202
IX2474AF
4M BIT-D-RAM
AND GATE
IC1906
TC7ST08F
AND GATE
IC1916
74VHC08F
CLOCK GENERATOR
IC1907
TC9246F
IC1990
74AC04FS
INVERTER
IC1801
XC62EP32
REGULATOR
IC1402
S29294A
E²-PROM
1401
32AW
YSTEM
OMPUTER
TO MAIN PWB
CNS301
P30 3 - H
TO MAIN PWB
P30 4 - H
CNP471
CN1904
DIGOUT
GND
GND
DIGIN
CN1902
PDOWN
BACKUP
LOAD SW
RESET
MD-ST
DSCK
SERCH
KDATA
MDDATA
DSTB
D.GND
DVDD
SYSCLK
ADDATA
LRCLK
BLCK
DADATA
DFS1
DFS0
MUTE
Q1820
2SA1162G
Q1821
RNC1407
Q1822
RNC1407
Q1807
2SA1314C
Q1801
2SA1314C
Q1803
RN1406
Q1802
RN1406
Q1451
RNC1407
XL1201
33.8688MHz
BACKUP
VREF3.2V
PCNT0
AA GND

The numbers ❶ to ㉓ are waveform numbers shown in page 38, 39.

7	8	9	10	11	12

Figure 31 SCHEMATIC DIAGRAM (6/6)

VOLTAGE (MD MAIN PWB)

Q1801	
PIN NO.	VOLTAGE
E	5V
C	5V
B	43V

Q1802	
PIN NO.	VOLTAGE
E	0V
C	0V
B	0.15V

Q1803	
PIN NO.	VOLTAGE
E	0V
C	0V
B	3.1V

Q1807	
PIN NO.	VOLTAGE
E	3.95V
C	3.2V
B	3.3V

Q1820	
PIN NO.	VOLTAGE
E	3.2V
C	3.18V
B	2.4V

Q1821	
PIN NO.	VOLTAGE
E	0V
C	0V
B	3.08V

Q1822	
PIN NO.	VOLTAGE
E	0V
C	0V
B	0.1V

Q1451	
PIN NO.	VOLTAGE
E	0V
C	3.18V
B	0.1V

Q1401	
PIN NO.	VOLTAGE
E	3.2V
C	3.2V
B	0V

Q1402	
PIN NO.	VOLTAGE
E	0V
C	0V
B	2.3V

Q1403	
PIN NO.	VOLTAGE
E	3.18V
C	0V
B	3.15V

Q1404	
PIN NO.	VOLTAGE
E	0V
C	3.15V
B	2.1V

Q1601	
PIN NO.	VOLTAGE
E	5.45V
C	4.4V
B	4.8V

IC1801	
PIN NO.	VOLTAGE
1	0V
2	44V
3	3.2V
4	3.1V
5	0V

IC1907	
PIN NO.	VOLTAGE
1	2.8V
2	2.6V
3	4.9V
4	2.6V
5	1.6V
6	0V
7	0V
8	4.9V
9	0V
10	2.2V
11	5V
12	5V
13	0V
14	3.2V
15	3.1V
16	5V

IC1990	
PIN NO.	VOLTAGE
1	1.45V
2	1.7V
3	1.45V
4	1.7V
5	1.45V
6	1.7V
7	0V
8	1.7V
9	1.45V
10	1.37V
11	1.7V
12	1.37V
13	1.7V
14	3.17V

IC1101	
PIN NO.	VOLTAGE
1	0.7V
2	0.7V
3	0.7V
4	0.7V
5	1.6V
6	1.6V
7	0.7V
8	1.6V
9	1.6V
10	1.6V
11	1.6V
12	1.6V
13	3.2V
14	3.2V
15	0V
16	Groove:3.2V Pit:0V
17	Low reflection:0V High reflection:3.2V
18	0V
19	0V
20	1.45V
21	3.2V
22	0V
23	0V
24	3.2V
25	1.78V
26	1.78V
27	1.35V
28	1.36V
29	1.6V
30	1.6V
31	1.6V
32	1.6V
33	1.6V
34	0V
35	1.6V
36	1.6V
37	0.3V
38	1.6V
39	1.6V
40	1.6V
41	1.6V
42	3.2V
43	0V
44	1V
45	1.6V
46	1.6V
47	0.7V
48	0.7V

IC1202	
PIN NO.	VOLTAGE
1	1.1V
2	1.1V
3	3V
4	2V
5	1.5V
6	1.8V
7	0.8V
8	2.4V
9	1.2V
10	3.2V
11	1.2V
12	2.5V
13	1.3V
14	1.7V
15	1.3V
16	2.2V
17	2.4V
18	1.2V
19	1.1V
20	0V

IC1201	
PIN NO.	VOLTAGE
1	1.48V
2	0V
3	1.6V
4	0V
5	1.36V
6	1.77V
7	1.6V
8	1.36V
9	1.77V
10	1.25V
11	1.6V
12	3.17V
13	0V
14	0V
15	0V
16	0V
17	1.45V
18	1.56V
19	1.62V
20	1.7V
21	1.5V
22	1.63V
23	1.53V
24	1.8V
25	1.4V
26	1.2V
27	2.5V
28	0.8V
29	1.8V
30	1.4V
31	3.2V
32	1.2V
33	2.5V
34	1.3V
35	1.7V
36	1.3V
37	2.2V
38	0V
39	2.4V
40	1.2V
41	1.1V
42	1.5V
43	2V
44	3V
45	1.1V
46	1.1V
47	0V
48	3V
49	1.56V
50	PLAY:0V REC:1.5V
51	58V
52	0V
53	0V
54	58V
55	0V
56	0V
57	3.2V
58	3.2V
59	3.2V
60	3.17V
61	0V
62	3.17V
63	0V
64	1.3V
65	1.3V
66	DIC input:1.58V Other:0V
67	1.58V
68	3.17V
69	0V
70	1.5V
71	1.55V
72	1.5V
73	0V
74	1V
75	1.55V
76	1.8V
77	1.56V
78	0V
79	0V
80	3.16V
81	0V
82	0V
83	0V
84	1.5V
85	1.5V
86	3.1V
87	3.17V
88	0V
89	3.17V
90	0.5V
91	0.6V
92	0.4V
93	0.4V
94	0.4V
95	0.9V
96	0.7V
97	0.8V
98	3.16V
99	3.15V
100	0V

IC1401	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0.2V
4	3.2V
5	0V
6	0V
7	3.1V
8	0V
9	0V
10	0V
11	0V
12	3.18V
13	144V
14	0V
15	1.5V
16	3.2V
17	3.2V
18	3.1V
19	0V
20	0V
21	0V
22	3.15V
23	3.2V
24	0V
25	3.2V
26	3.2V
27	0V
28	0V
29	2V
30	3.2V
31	0V
32	3.2V
33	0V
34	0.8V
35	2.2V
36	0.2V
37	2.3V
38	0V
39	PLAY:3.15V REC:0V
40	0V
41	0V
42	0V
43	3.2V
44	0V
45	0V
46	3.15V
47	0V
48	0V
49	0V
50	0V
51	0V
52	0V
53	0V
54	0V
55	0V
56	0V
57	0V
58	0V
59	3.2V
60	0V
61	3.2V
62	3.2V
63	0V
64	0V
65	3.2V
66	3.2V
67	3.2V
68	0V
69	0V
70	3.1V
71	0V
72	3.1V
73	3.2V
74	0V
75	3.2V
76	3.2V
77	0V
78	0V
79	0V
80	3.15V
81	0V
82	0V
83	3.2V
84	3.2V
85	3.2V
86	3.2V
87	3.2V
88	3.2V
89	1.7V
90	1.8V
91	1.8V
92	1.4V
93	Low reflectio:2.2V High reflection:0.1V
94	3.2V
95	3.2V
96	0V
97	2V
98	3.2V
99	3.2V
100	0V

IC1601	
PIN NO.	VOLTAGE
1	1.25V
2	4V
3	1.5V
4	5.5V
5	5.5V
6	1.5V
7	5V
8	2.7V
9	2.8V
10	0V
11	0V
12	2.7V
13	2.76V
14	1.6V
15	1.6V
16	1.6V
17	3.15V
18	3.15V
19	0V
20	1.6V
21	1.6V
22	1.6V
23	1.23V
24	1.23V
25	1.6V
26	1.6V
27	1.62V
28	2.7V
29	2.8V
30	2.7V
31	2.7V
32	0V
33	0V
34	3.0V
35	2.4V
36	0V
37	1.64V
38	5.5V
39	5.5V
40	1.64V
41	1.68V
42	1.68V

IC1251	
PIN NO.	VOLTAGE
1	2.6V
2	2.6V
3	0.1V
4	2.6V
5	2.6V
6	0.1V
7	0V
8	1.56V
9	0.1V
10	2.6V
11	1.56V
12	0.1V
13	2.6V
14	5.2V

O1251	
PIN NO.	VOLTAGE
D	4.4V
S	1.4V
G	2.6V

Q1252	
PIN NO.	VOLTAGE
D	4.4V
S	1.4V
G	2.6V

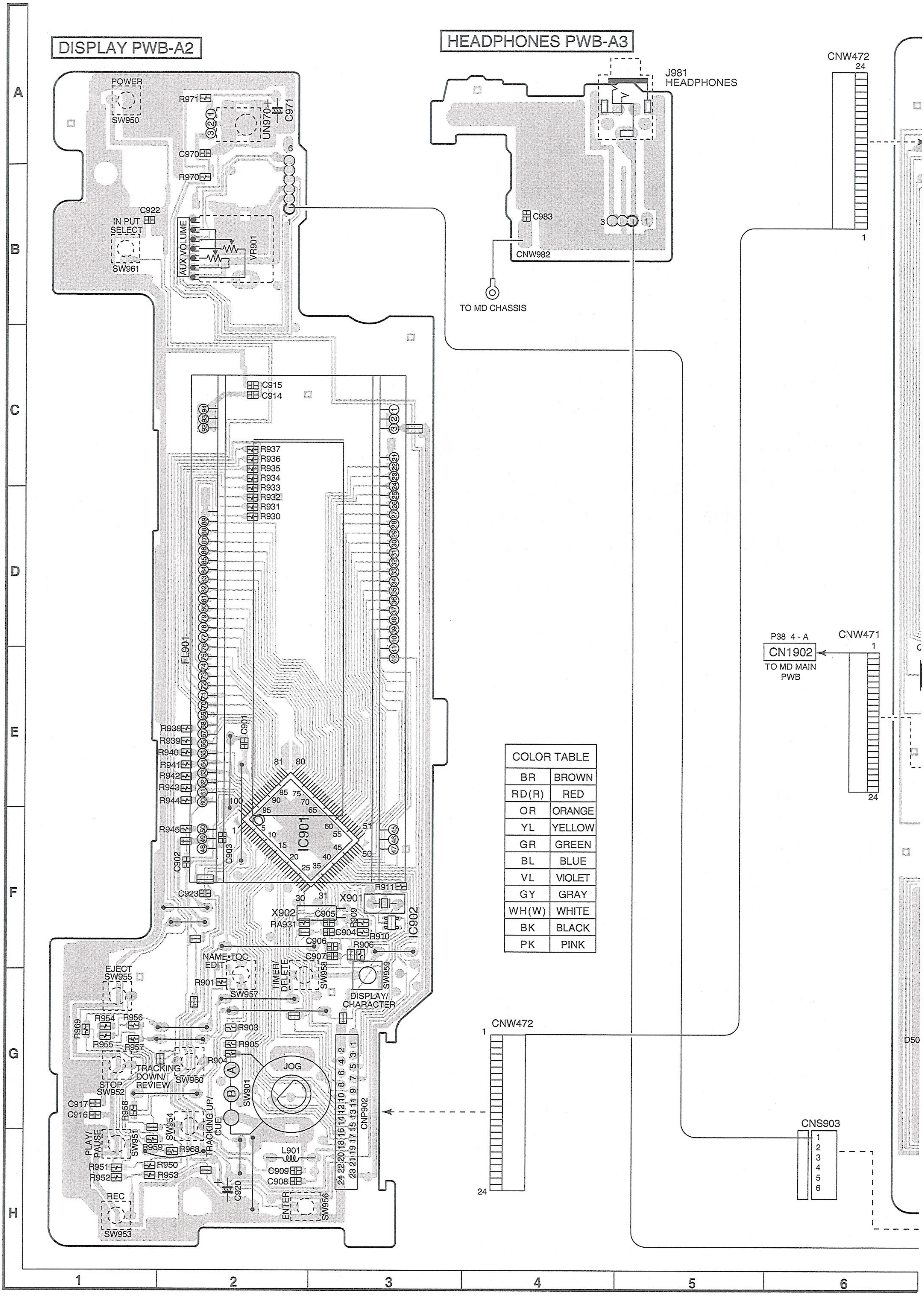
Q1253	
PIN NO.	VOLTAGE
D	15V
S	0V
G	2.6V

Q1254	
PIN NO.	VOLTAGE
D	15V
S	0V
G	2.8V

IC1916	
PIN NO.	VOLTAGE
1	1.58V
2	3.2V
3	1.58V
4	3.2V
5	DIC input:2.2V Other:0V
6	DIC input:1.58V Other:0V
7	1.55V
8	2.2V
9	3.2V
10	3.2V
11	97A:3.2V 97B:1V
12	97A:3.2V 97A:0.9V

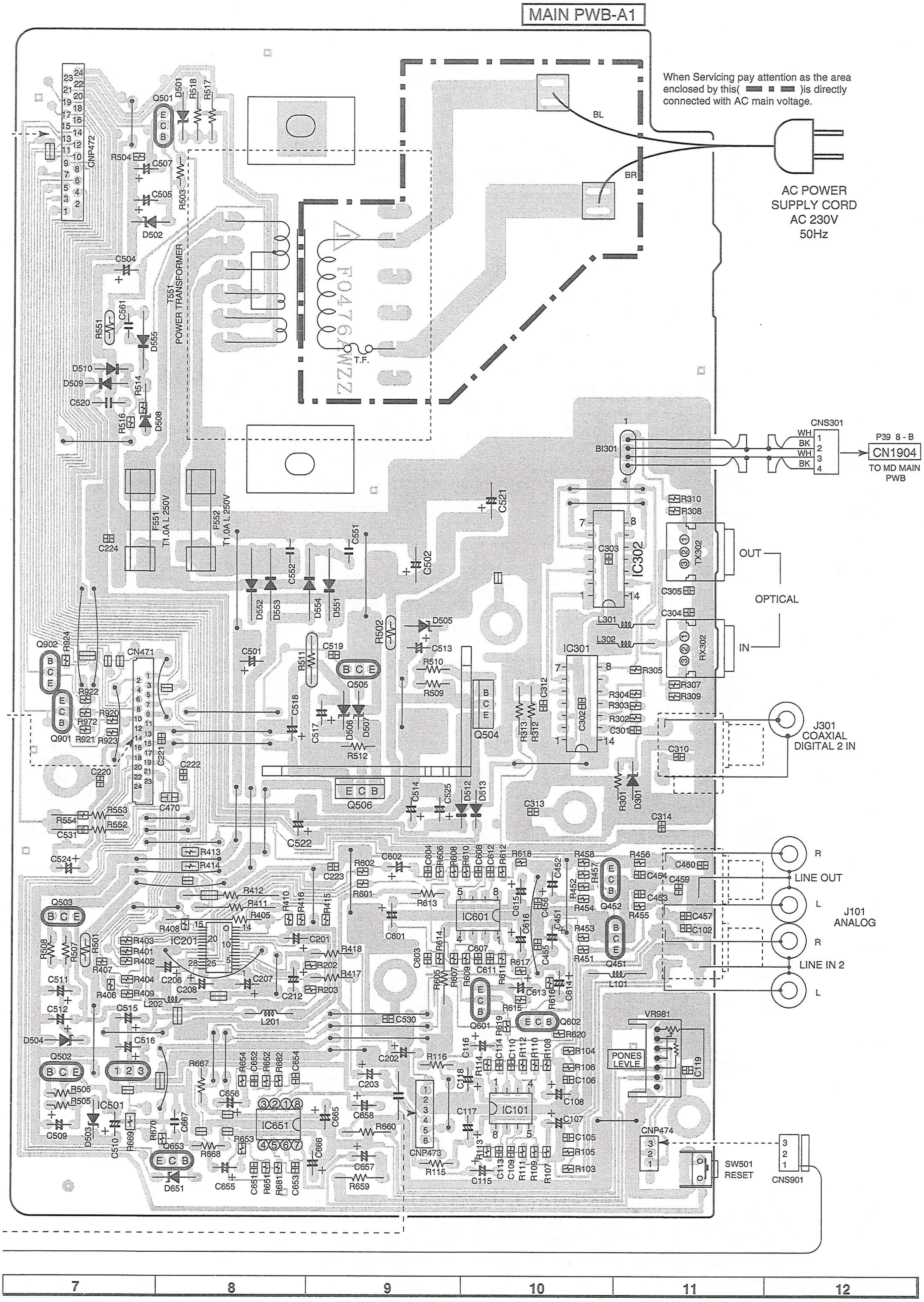
IC1402	
PIN NO.	VOLTAGE
1	0V
2	3.2V
3	3.2V
4	3.2V
5	0V
6	0V
7	0V
8	0V

IC1906	
PIN NO.	VOLTAGE
1	5.5V
2	1.6V
3	0V
4	2.8V
5	5.5V


DISPLAY PWB-A2
HEADPHONES PWB-A3
POWER
SW950
R971
UN970
C971
C970
R970
C922
IN PUT SELECT
SW961
AUX VOLUME
VR901
J981 HEADPHONES
C983
CNW982
TO MD CHASSIS
CNW472
CNW471
P38 4 - A
CN1902
TO MD MAIN PWB
C915
C914
R937
R936
R935
R934
R933
R932
R931
R930
FL901
R938
R939
R940
R941
R942
R943
R944
R945
C901
C902
C903
IC901
C923
X901
X902
RA931
C905
C904
R909
R910
R911
IC902
C906
C907
R906
NAME TOC EDIT
TIMER/ DELETE
SW958
SW959
DISPLAY/ CHARACTER
EJECT
SW955
R901
SW957
R969
R954
R956
R955
R957
R903
R905
R904
TRACKING DOWN/ REVIEW
SW960
STOP
SW952
JOG
SW901
CNP902
C917
C916
R958
SW954
PLAY/ PAUSE
SW951
R959
R968
TRACKING UP/ CUE
L901
C909
C908
R951
R950
R952
R953
C920
REC
SW953
ENTER
SW956
CNS903
D50
A
B
C
D
E
F
G
H
1
2
3
4
5
6

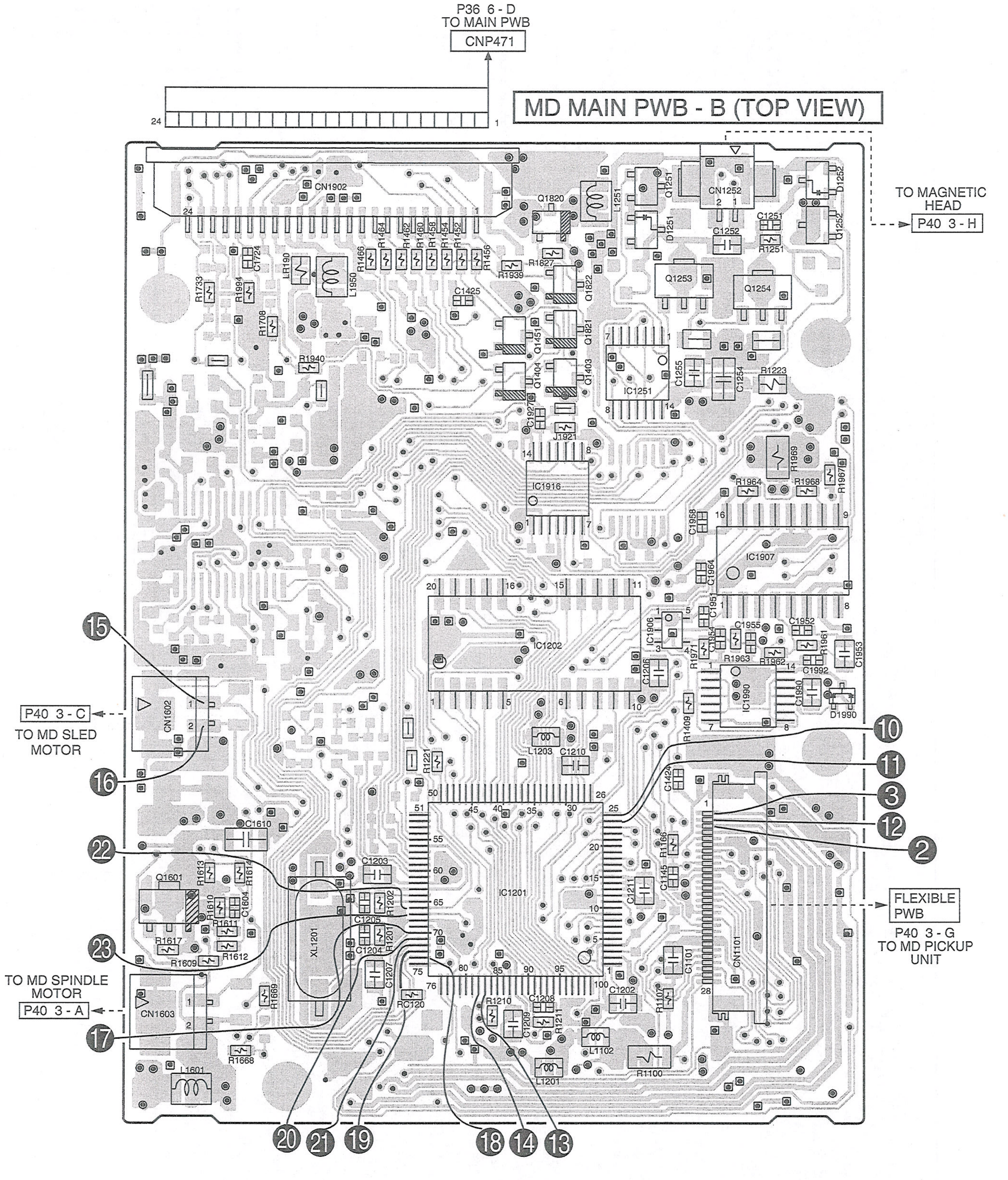
COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK

Figure 32 WIRIMG SIDE OF P.W.BOARD (1/5)


When Servicing pay attention as the area enclosed by this(▬ ▪ ▬)is directly connected with AC main voltage.

MAIN PWB-A1
AC POWER SUPPLY CORD
AC 230V
50Hz
BL
BR
T551 POWER TRANSFORMER
T.F.
F551 T1.0A L 250V
F552 T1.0A L 250V
CNS301
WH
BK
WH
BK
P39 8 - B
CN1904
TO MD MAIN PWB
BI301
IC302
TX302
OUT
OPTICAL
IN
RX302
IC301
J301
COAXIAL
DIGITAL 2 IN
R
LINE OUT
L
J101
ANALOG
R
LINE IN 2
L
VR981
PONES LEVLE
CNP474
SW501
RESET
CNS901
CNP472
CN471
CNP473
IC201
IC601
IC651
IC101
IC501
Q501
Q502
Q503
Q504
Q505
Q506
Q452
Q453
Q601
Q602
Q653
Q901
Q902
7
8
9
10
11
12

Figure 33 WIRIMG SIDE OF P.W.BOARD (2/5)


A
B
C
D
E
F
G
H
P36 6 - D
TO MAIN PWB
CNP471
24
1
MD MAIN PWB - B (TOP VIEW)
TO MAGNETIC HEAD
P40 3 - H
CN1902
CN1252
Q1820
L1251
Q1251
D1251
D1252
Q1252
C1251
C1252
R1251
Q1253
Q1254
R1466
R1464
R1462
R1460
R1458
R1454
R1452
R1456
R1827
R1939
C1724
LR190
L1950
R1733
R1994
R1708
C1425
Q1822
Q1451
Q1821
Q1404
Q1403
R1940
C1927
J1921
IC1251
C1255
C1254
R1223
IC1916
R1969
R1964
R1968
R1967
C1958
IC1907
C1964
C1957
IC1202
IC1906
C1955
C1952
R1961
C1953
C1954
R1971
R1963
R1962
C1992
C1206
IC1990
C1990
D1990
R1409
L1203
C1210
R1221
C1424
CN1602
P40 3 - C
TO MD SLED MOTOR
C1610
C1203
IC1201
R1166
C1145
C1211
C1101
CN1101
FLEXIBLE PWB
P40 3 - G
TO MD PICKUP UNIT
Q1601
R1613
R1614
R1610
R1611
C1604
R1617
R1609
R1612
XL1201
C1205
R1202
R1201
C1204
C1207
RC120
R1210
C1208
C1209
R1211
C1202
R1107
L1102
R1100
L1201
R1669
TO MD SPINDLE MOTOR
P40 3 - A
CN1603
R1668
L1601
⑮
⑯
㉒
㉓
⑰
⑩
⑪
③
⑫
②
⑳
㉑
⑲
⑱
⑭
⑬
1
2
3
4
5
6

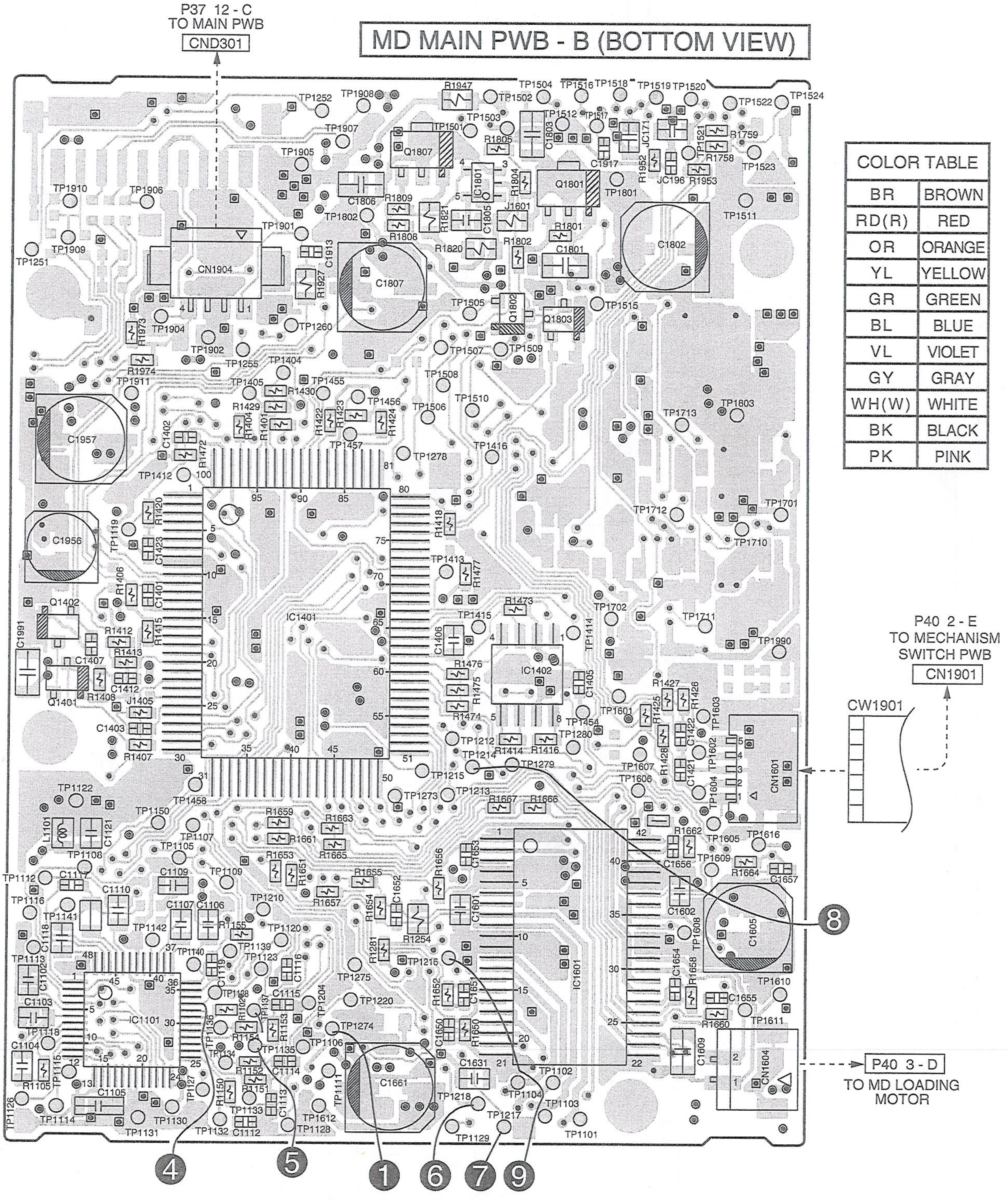
◎ :Through-hole where the top, bottom and +B patterns are connected.

▣ :Through-hole where the top, bottom and ground patterns are connected.

• :Through-hole where the top and bottom patterns are connected.

The numbers ① to ㉓ are waveform numbers shown in page 38, 39.

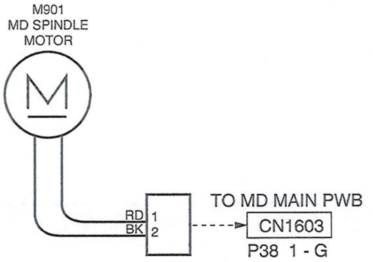
Figure 34 WIRIMG SIDE OF P.W.BOARD (3/5)

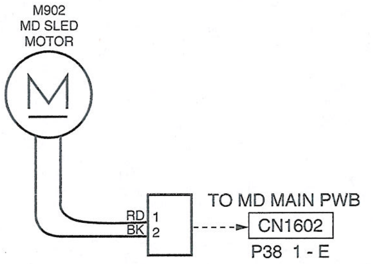

P37 12 - C
TO MAIN PWB
CND301
MD MAIN PWB - B (BOTTOM VIEW)
P40 2 - E
TO MECHANISM
SWITCH PWB
CN1901
CW1901
CN1601
P40 3 - D
TO MD LOADING
MOTOR
CN1604
CN1904
IC1401
IC1402
IC1601
IC1101
C1957
C1956
C1807
C1802
C1605
C1661
Q1807
Q1801
Q1802
Q1803
Q1401
Q1402
L1101
①
④
⑤
⑥
⑦
⑧
⑨

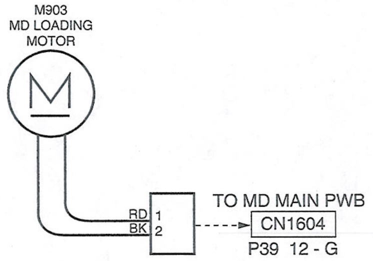
COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK

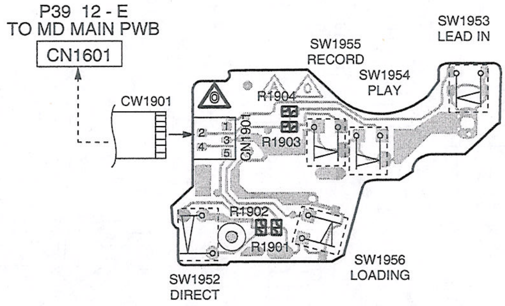
7	8	9	10	11	12

Figure 35 WIRIMG SIDE OF P.W.BOARD (4/5)


M901
MD SPINDLE
MOTOR
RD 1
BK 2
TO MD MAIN PWB
CN1603
P38 1 - G


M902
MD SLED
MOTOR
RD 1
BK 2
TO MD MAIN PWB
CN1602
P38 1 - E


M903
MD LOADING
MOTOR
RD 1
BK 2
TO MD MAIN PWB
CN1604
P39 12 - G


P39 12 - E
TO MD MAIN PWB
CN1601
CW1901
SW1955
RECORD
SW1954
PLAY
SW1953
LEAD IN
R1904
R1903
CN1901
1
2
3
4
5
R1902
R1901
SW1952
DIRECT
SW1956
LOADING

MD MECHANISM SWITCH PWB-C

COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK

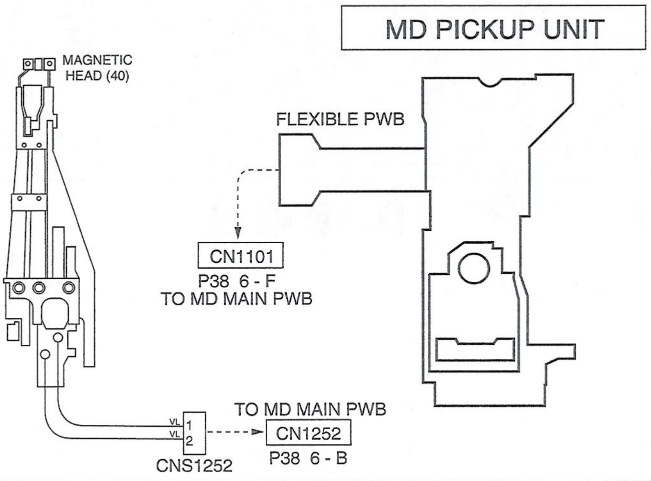

MD PICKUP UNIT
MAGNETIC
HEAD (40)
FLEXIBLE PWB
CN1101
P38 6 - F
TO MD MAIN PWB
VL 1
VL 2
CNS1252
TO MD MAIN PWB
CN1252
P38 6 - B

Figure 36 WIRIMG SIDE OF P.W.BOARD (5/5)

VOLTAGE (MD MAIN PWB)

Q1801	
PIN NO.	VOLTAGE
E	5V
C	5V
B	43V

Q1802	
PIN NO.	VOLTAGE
E	0V
C	0V
B	0.15V

Q1803	
PIN NO.	VOLTAGE
E	0V
C	0V
B	3.1V

Q1807	
PIN NO.	VOLTAGE
E	3.95V
C	3.2V
B	3.3V

Q1820	
PIN NO.	VOLTAGE
E	3.2V
C	3.18V
B	2.4V

Q1821	
PIN NO.	VOLTAGE
E	0V
C	0V
B	3.08V

Q1822	
PIN NO.	VOLTAGE
E	0V
C	0V
B	0.1V

Q1451	
PIN NO.	VOLTAGE
E	0V
C	3.18V
B	0.1V

Q1401	
PIN NO.	VOLTAGE
E	3.2V
C	3.2V
B	0V

Q1402	
PIN NO.	VOLTAGE
E	0V
C	0V
B	2.3V

Q1403	
PIN NO.	VOLTAGE
E	3.18V
C	0V
B	3.15V

Q1404	
PIN NO.	VOLTAGE
E	0V
C	3.15V
B	2.1V

Q1601	
PIN NO.	VOLTAGE
E	5.45V
C	4.4V
B	4.8V

IC1801	
PIN NO.	VOLTAGE
1	0V
2	44V
3	3.2V
4	3.1V
5	0V

IC1907	
PIN NO.	VOLTAGE
1	2.8V
2	2.6V
3	4.9V
4	2.6V
5	1.6V
6	0V
7	0V
8	4.9V
9	0V
10	2.2V
11	5V
12	5V
13	0V
14	3.2V
15	3.1V
16	5V

IC1990	
PIN NO.	VOLTAGE
1	1.45V
2	1.7V
3	1.45V
4	1.7V
5	1.45V
6	1.7V
7	0V
8	1.7V
9	1.45V
10	1.37V
11	1.7V
12	1.37V
13	1.7V
14	3.17V

IC1101	
PIN NO.	VOLTAGE
1	0.7V
2	0.7V
3	0.7V
4	0.7V
5	1.6V
6	1.6V
7	0.7V
8	1.6V
9	1.6V
10	1.6V
11	1.6V
12	1.6V
13	3.2V
14	3.2V
15	0V
16	Groove:3.2V Pit:0V
17	Low reflection:0V High reflection:3.2V
18	0V
19	0V
20	1.45V
21	3.2V
22	0V
23	0V
24	3.2V
25	1.78V
26	1.78V
27	1.35V
28	1.36V
29	1.6V
30	1.6V
31	1.6V
32	1.6V
33	1.6V
34	0V
35	1.6V
36	1.6V
37	0.3V
38	1.6V
39	1.6V
40	1.6V
41	1.6V
42	3.2V
43	0V
44	1V
45	1.6V
46	1.6V
47	0.7V
48	0.7V

IC1202	
PIN NO.	VOLTAGE
1	1.1V
2	1.1V
3	3V
4	2V
5	1.5V
6	1.8V
7	0.8V
8	2.4V
9	1.2V
10	3.2V
11	1.2V
12	2.5V
13	1.3V
14	1.7V
15	1.3V
16	2.2V
17	2.4V
18	1.2V
19	1.1V
20	0V

IC1201	
PIN NO.	VOLTAGE
1	1.48V
2	0V
3	1.6V
4	0V
5	1.36V
6	1.77V
7	1.6V
8	1.36V
9	1.77V
10	1.25V
11	1.6V
12	3.17V
13	0V
14	0V
15	0V
16	0V
17	1.45V
18	1.56V
19	1.62V
20	1.7V
21	1.5V
22	1.63V
23	1.53V
24	1.8V
25	1.4V
26	1.2V
27	2.5V
28	0.8V
29	1.8V
30	1.4V
31	3.2V
32	1.2V
33	2.5V
34	1.3V
35	1.7V
36	1.3V
37	2.2V
38	0V
39	2.4V
40	1.2V
41	1.1V
42	1.5V
43	2V
44	3V
45	1.1V
46	1.1V
47	0V
48	3V
49	1.56V
50	PLAY:0V REC:1.5V
51	58V
52	0V
53	0V
54	58V
55	0V
56	0V
57	3.2V
58	3.2V
59	3.2V
60	3.17V
61	0V
62	3.17V
63	0V
64	1.3V
65	1.3V
66	DIC input:1.58V Other:0V
67	1.58V
68	3.17V
69	0V
70	1.5V
71	1.55V
72	1.5V
73	0V
74	1V
75	1.55V
76	1.8V
77	1.56V
78	0V
79	0V
80	3.16V
81	0V
82	0V
83	0V
84	1.5V
85	1.5V
86	3.1V
87	3.17V
88	0V
89	3.17V
90	0.5V
91	0.6V
92	0.4V
93	0.4V
94	0.4V
95	0.9V
96	0.7V
97	0.8V
98	3.16V
99	3.15V
100	0V

IC1401	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0.2V
4	3.2V
5	0V
6	0V
7	3.1V
8	0V
9	0V
10	0V
11	0V
12	3.18V
13	144V
14	0V
15	1.5V
16	3.2V
17	3.2V
18	3.1V
19	0V
20	0V
21	0V
22	3.15V
23	3.2V
24	0V
25	3.2V
26	3.2V
27	0V
28	0V
29	2V
30	3.2V
31	0V
32	3.2V
33	0V
34	0.8V
35	2.2V
36	0.2V
37	2.3V
38	0V
39	PLAY:3.15V REC:0V
40	0V
41	0V
42	0V
43	3.2V
44	0V
45	0V
46	3.15V
47	0V
48	0V
49	0V
50	0V
51	0V
52	0V
53	0V
54	0V
55	0V
56	0V
57	0V
58	0V
59	3.2V
60	0V
61	3.2V
62	3.2V
63	0V
64	0V
65	3.2V
66	3.2V
67	3.2V
68	0V
69	0V
70	3.1V
71	0V
72	3.1V
73	3.2V
74	0V
75	3.2V
76	3.2V
77	0V
78	0V
79	0V
80	3.15V
81	0V
82	0V
83	3.2V
84	3.2V
85	3.2V
86	3.2V
87	3.2V
88	3.2V
89	1.7V
90	1.8V
91	1.8V
92	1.4V
93	Low reflectio:2.2V High reflection:0.1V
94	3.2V
95	3.2V
96	0V
97	2V
98	3.2V
99	3.2V
100	0V

IC1601	
PIN NO.	VOLTAGE
1	1.25V
2	4V
3	1.5V
4	5.5V
5	5.5V
6	1.5V
7	5V
8	2.7V
9	2.8V
10	0V
11	0V
12	2.7V
13	2.76V
14	1.6V
15	1.6V
16	1.6V
17	3.15V
18	3.15V
19	0V
20	1.6V
21	1.6V
22	1.6V
23	1.23V
24	1.23V
25	1.6V
26	1.6V
27	1.62V
28	2.7V
29	2.8V
30	2.7V
31	2.7V
32	0V
33	0V
34	3.0V
35	2.4V
36	0V
37	1.64V
38	5.5V
39	5.5V
40	1.64V
41	1.68V
42	1.68V

IC1251	
PIN NO.	VOLTAGE
1	2.6V
2	2.6V
3	0.1V
4	2.6V
5	2.6V
6	0.1V
7	0V
8	1.56V
9	0.1V
10	2.6V
11	1.56V
12	0.1V
13	2.6V
14	5.2V

Q1251	
PIN NO.	VOLTAGE
D	4.4V
S	1.4V
G	2.6V

Q1252	
PIN NO.	VOLTAGE
D	4.4V
S	1.4V
G	2.6V

Q1253	
PIN NO.	VOLTAGE
D	15V
S	0V
G	2.6V

Q1254	
PIN NO.	VOLTAGE
D	15V
S	0V
G	2.6V

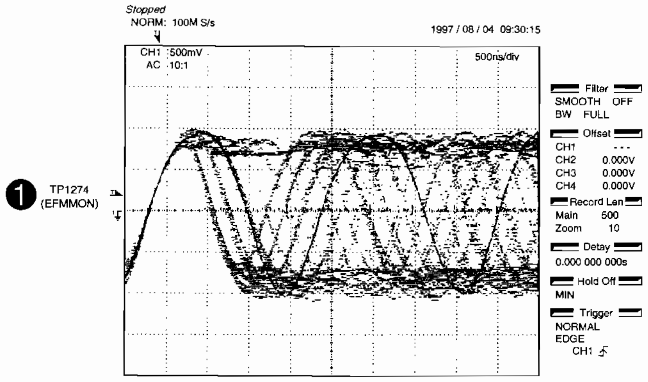
IC1916	
PIN NO.	VOLTAGE
1	1.58V
2	3.2V
3	1.58V
4	3.2V
5	DIC input:2.2V Other:0V
6	DIC input:1.58V Other:0V
7	1.55V
8	2.2V
9	3.2V
10	3.2V
11	97A:3.2V 97B:1V
12	97A:3.2V 97A:0.9V

IC1402	
PIN NO.	VOLTAGE
1	0V
2	3.2V
3	3.2V
4	3.2V
5	0V
6	0V
7	0V
8	0V

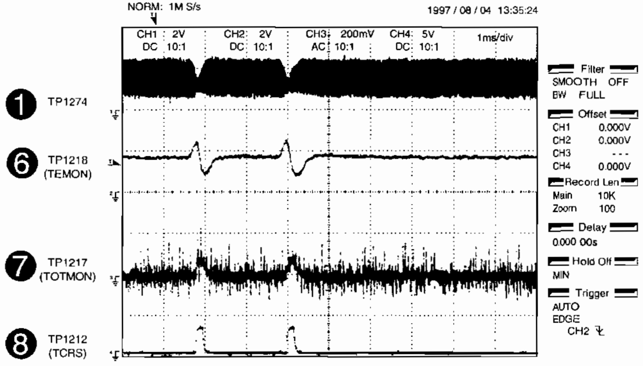
IC1906	
PIN NO.	VOLTAGE
1	5.5V
2	1.6V
3	0V
4	2.8V
5	5.5V

WAVEFORMS OF MD CIRCUIT

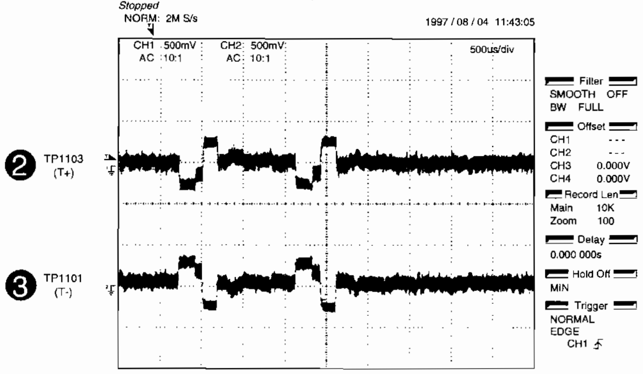
PLAY STATE



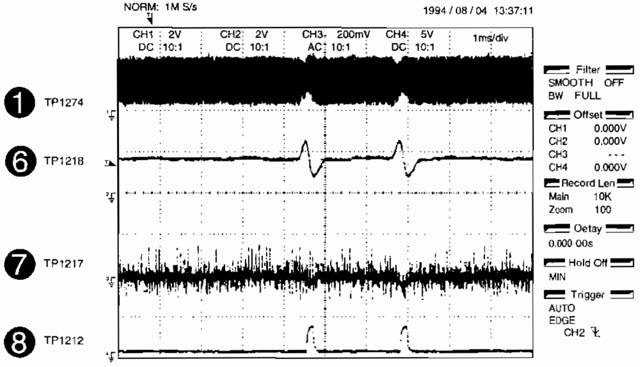
PIT PLAY



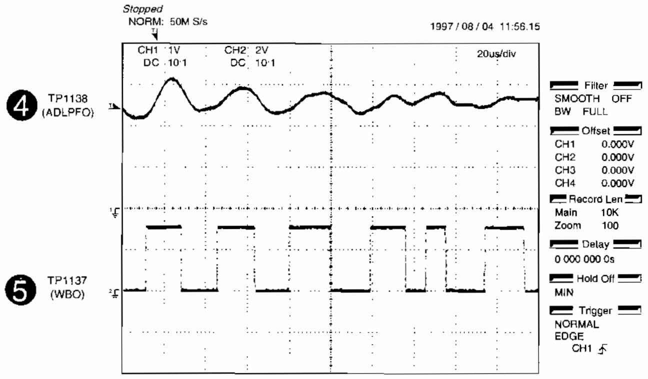
GROOVE PLAY



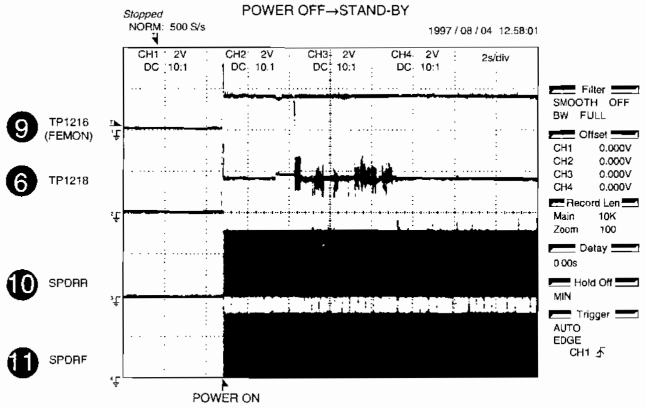
GROOVE PLAY



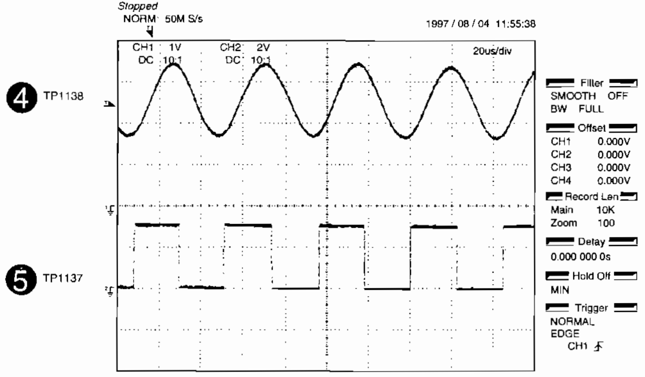
PIT PLAY



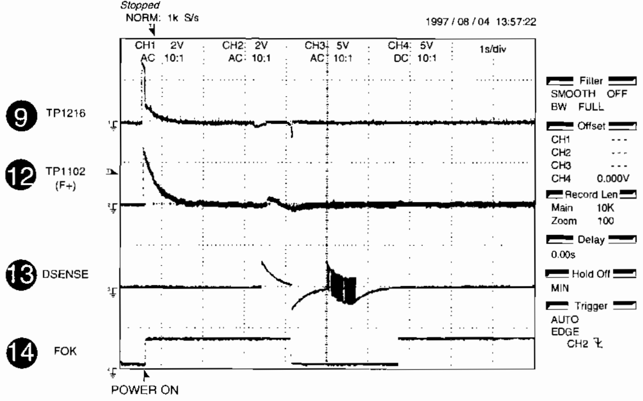
POWER OFF→STAND-BY

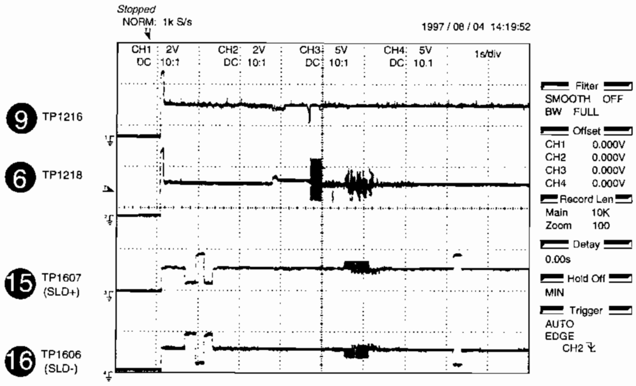


GROOVE PLAY



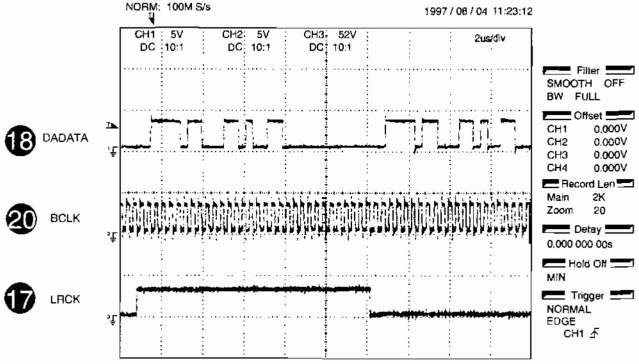
POWER OFF→STAND-BY



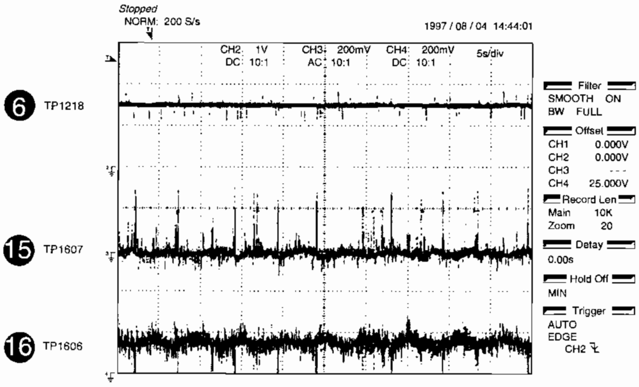


Stopped
NORM: 1k S/s
1997 / 08 / 04 14:19:52
CH1 2V DC 10:1
CH2 2V DC 10:1
CH3 5V DC 10:1
CH4 5V DC 10:1
1s/div
Filter
SMOOTH OFF
BW FULL
Offset
CH1 0.000V
CH2 0.000V
CH3 0.000V
CH4 0.000V
Record Len
Main 10K
Zoom 100
Delay
0.00s
Hold Off
MIN
Trigger
AUTO
EDGE
CH2

PLAY

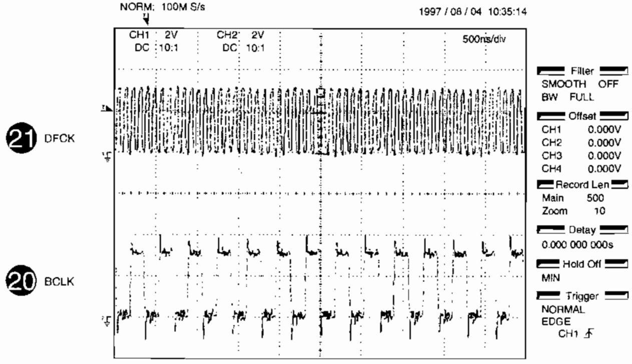


Stopped
NORM: 100M S/s
1997 / 08 / 04 11:23:12
CH1 5V DC 10:1
CH2 5V DC 10:1
CH3 52V DC 10:1
2us/div
Filter
SMOOTH OFF
BW FULL
Offset
CH1 0.000V
CH2 0.000V
CH3 0.000V
CH4 0.000V
Record Len
Main 2K
Zoom 20
Delay
0.000 000 00s
Hold Off
MIN
Trigger
NORMAL
EDGE
CH1



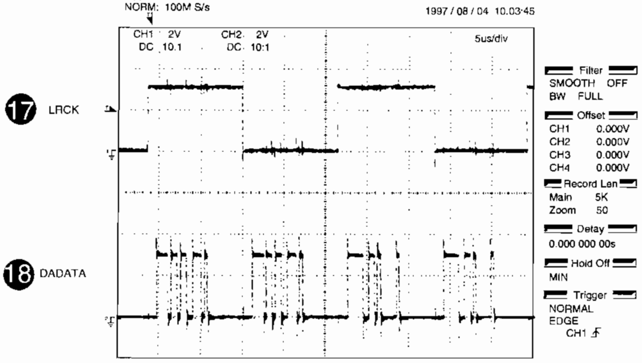
Stopped
NORM: 200 S/s
1997 / 08 / 04 14:44:01
CH2 1V DC 10:1
CH3 200mV AC 10:1
CH4 200mV DC 10:1
5s/div
Filter
SMOOTH ON
BW FULL
Offset
CH1 0.000V
CH2 0.000V
CH3 ---
CH4 25.000V
Record Len
Main 10K
Zoom 20
Delay
0.00s
Hold Off
MIN
Trigger
AUTO
EDGE
CH2

PLAY



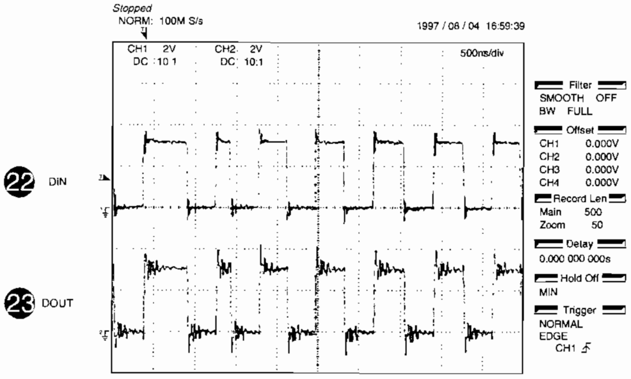
Stopped
NORM: 100M S/s
1997 / 08 / 04 10:35:14
CH1 2V DC 10:1
CH2 2V DC 10:1
500ns/div
Filter
SMOOTH OFF
BW FULL
Offset
CH1 0.000V
CH2 0.000V
CH3 0.000V
CH4 0.000V
Record Len
Main 500
Zoom 10
Delay
0.000 000 000s
Hold Off
MIN
Trigger
NORMAL
EDGE
CH1

D/A CONVERSION PLAY



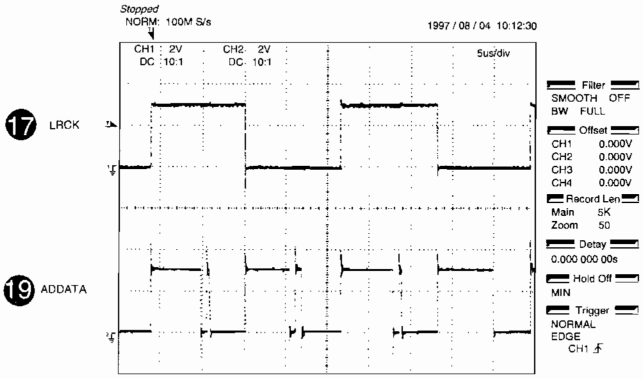
Stopped
NORM: 100M S/s
1997 / 08 / 04 10:03:45
CH1 2V DC 10:1
CH2 2V DC 10:1
5us/div
Filter
SMOOTH OFF
BW FULL
Offset
CH1 0.000V
CH2 0.000V
CH3 0.000V
CH4 0.000V
Record Len
Main 5K
Zoom 50
Delay
0.000 000 00s
Hold Off
MIN
Trigger
NORMAL
EDGE
CH1

DIGITAL REC



Stopped
NORM: 100M S/s
1997 / 08 / 04 16:59:39
CH1 2V DC 10:1
CH2 2V DC 10:1
500ns/div
Filter
SMOOTH OFF
BW FULL
Offset
CH1 0.000V
CH2 0.000V
CH3 0.000V
CH4 0.000V
Record Len
Main 500
Zoom 50
Delay
0.000 000 000s
Hold Off
MIN
Trigger
NORMAL
EDGE
CH1

A/DCONVERSION ANALOG REC (NO SIGNAL)



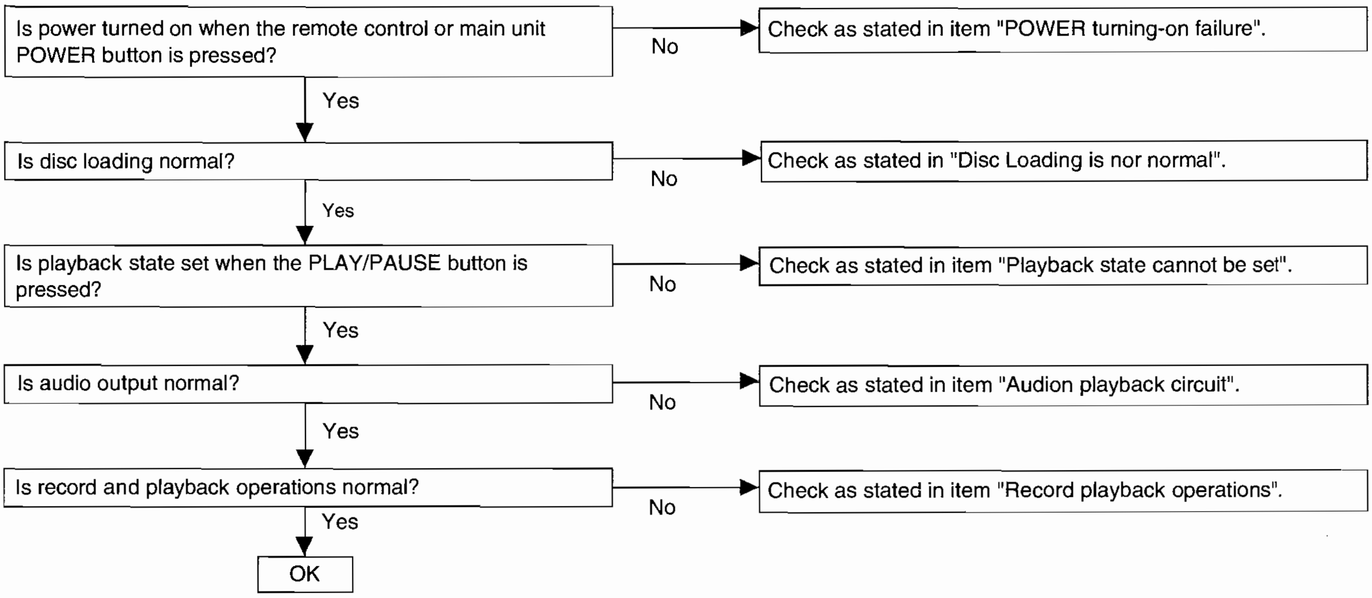
Stopped
NORM: 100M S/s
1997 / 08 / 04 10:12:30
CH1 2V DC 10:1
CH2 2V DC 10:1
5us/div
Filter
SMOOTH OFF
BW FULL
Offset
CH1 0.000V
CH2 0.000V
CH3 0.000V
CH4 0.000V
Record Len
Main 5K
Zoom 50
Delay
0.000 000 00s
Hold Off
MIN
Trigger
NORMAL
EDGE
CH1

TROUBLE SHOOTING

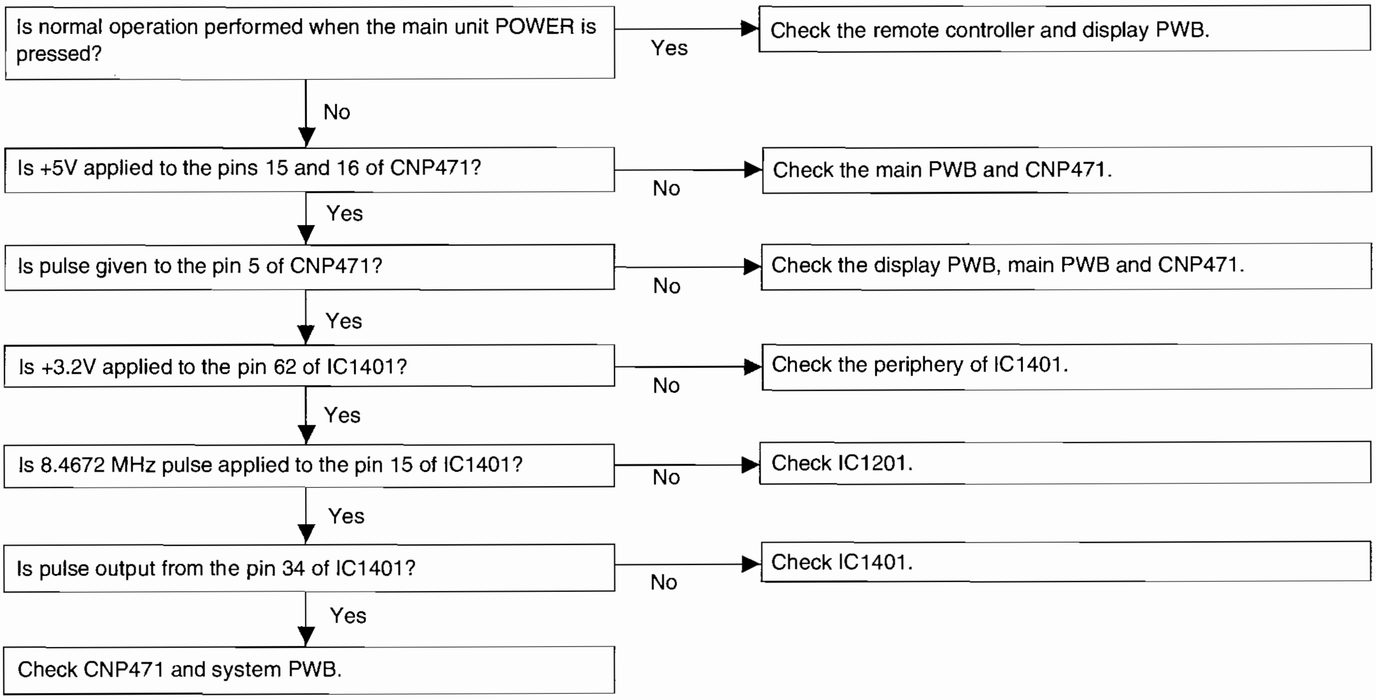
When MD fails operate

If the objective lens of optical pickup is contaminated, MD may fail to operate. At first, clean the objective lens to check playback operation. If MD fails persistently to operate, perform checks as follows.
If dust or foreign substance is accumulated on the pickup lens, playback is disturbed and indication of TOC (content of tracks) may be disabled. Before adjusting check that the lens is clean. If the lens is contaminated, treat it as follows.

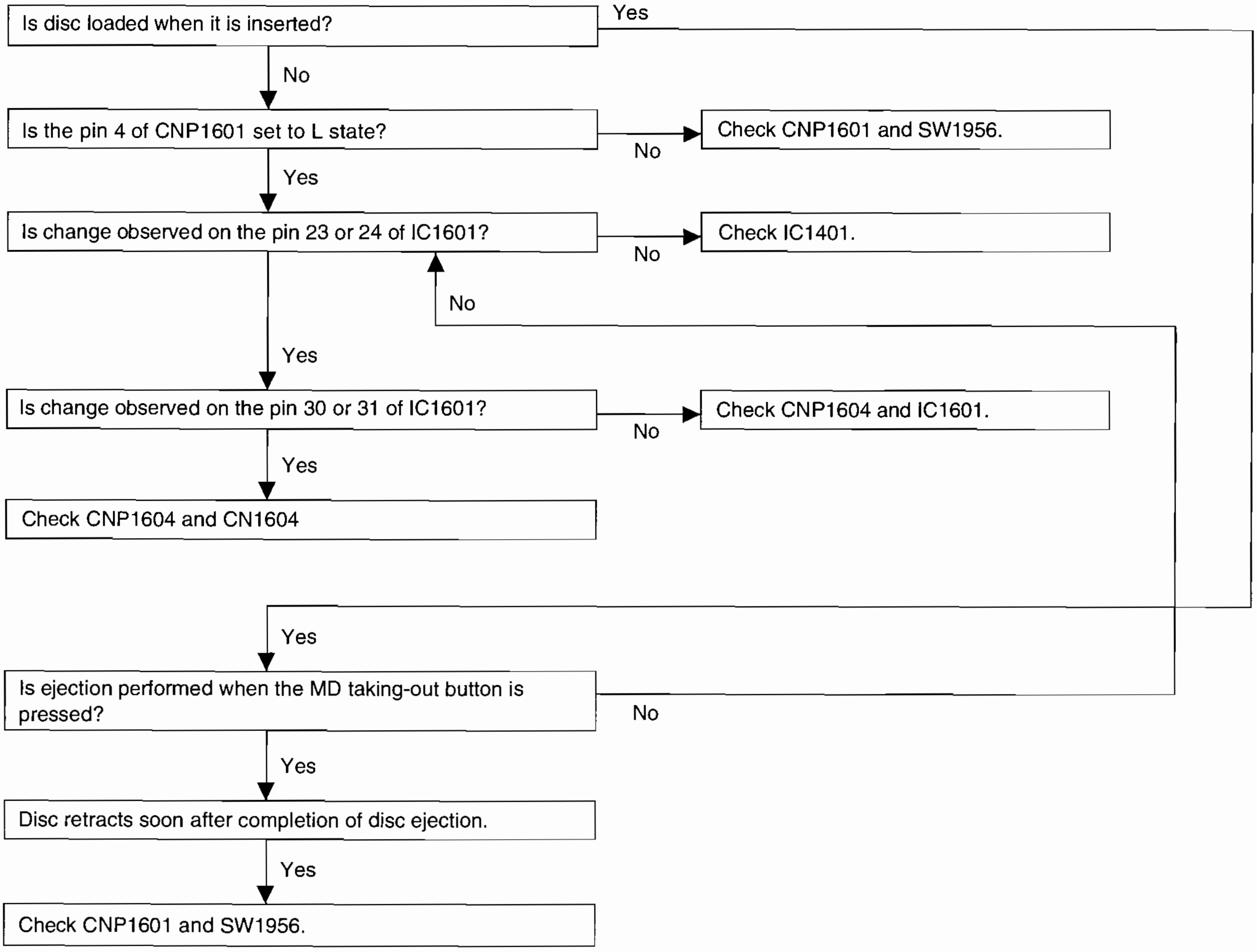
Turn off power supply, impregnate the lens cleaning paper with a small quantity of isopropyl alcohol, and gently wipe the lens with it with due care so that the lens is not damaged. At this time do not touch the lens directly with your finger.


Is power turned on when the remote control or main unit POWER button is pressed?
No
Check as stated in item "POWER turning-on failure".
Yes
Is disc loading normal?
No
Check as stated in "Disc Loading is nor normal".
Yes
Is playback state set when the PLAY/PAUSE button is pressed?
No
Check as stated in item "Playback state cannot be set".
Yes
Is audio output normal?
No
Check as stated in item "Audion playback circuit".
Yes
Is record and playback operations normal?
No
Check as stated in item "Record playback operations".
Yes
OK

• Power turning-on failure.


Is normal operation performed when the main unit POWER is pressed?
Yes
Check the remote controller and display PWB.
No
Is +5V applied to the pins 15 and 16 of CNP471?
No
Check the main PWB and CNP471.
Yes
Is pulse given to the pin 5 of CNP471?
No
Check the display PWB, main PWB and CNP471.
Yes
Is +3.2V applied to the pin 62 of IC1401?
No
Check the periphery of IC1401.
Yes
Is 8.4672 MHz pulse applied to the pin 15 of IC1401?
No
Check IC1201.
Yes
Is pulse output from the pin 34 of IC1401?
No
Check IC1401.
Yes
Check CNP471 and system PWB.

• Disc loading is not normal.



Is disc loaded when it is inserted?

Is the pin 4 of CNP1601 set to L state?

Check CNP1601 and SW1956.

Is change observed on the pin 23 or 24 of IC1601?

Check IC1401.

Is change observed on the pin 30 or 31 of IC1601?

Check CNP1604 and IC1601.

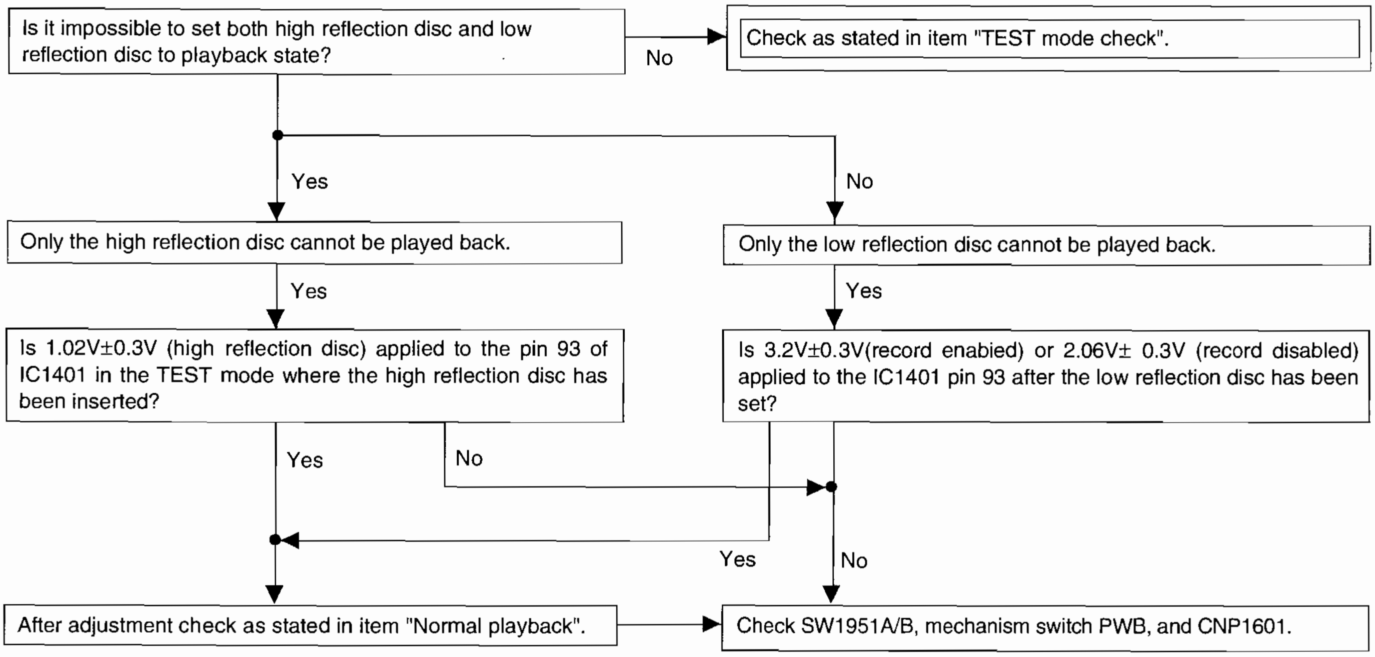
Check CNP1604 and CN1604

Is ejection performed when the MD taking-out button is pressed?

Disc retracts soon after completion of disc ejection.

Check CNP1601 and SW1956.

• Playback state cannot be set.



Is it impossible to set both high reflection disc and low reflection disc to playback state?

Check as stated in item "TEST mode check".

Only the high reflection disc cannot be played back.

Only the low reflection disc cannot be played back.

Is 1.02V±0.3V (high reflection disc) applied to the pin 93 of IC1401 in the TEST mode where the high reflection disc has been inserted?

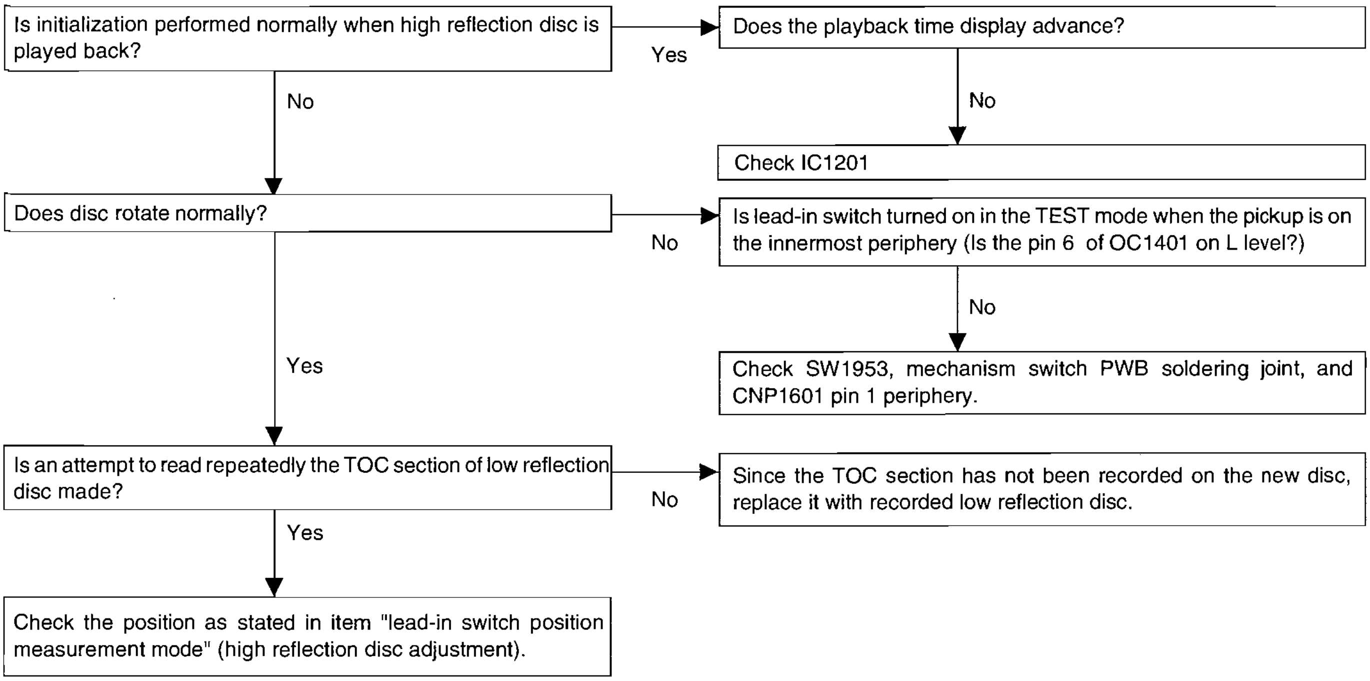
Is 3.2V±0.3V(record enabied) or 2.06V± 0.3V (record disabled) applied to the IC1401 pin 93 after the low reflection disc has been set?

After adjustment check as stated in item "Normal playback".

Check SW1951A/B, mechanism switch PWB, and CNP1601.

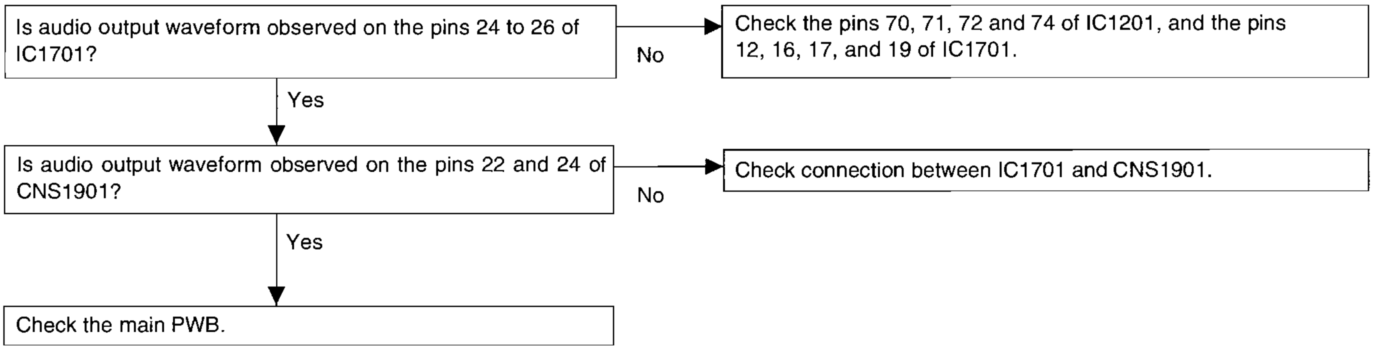
• Normal playback

When it has been confirmed that EEPROM value is normal in the TEST mode


Is initialization performed normally when high reflection disc is played back?
Yes
Does the playback time display advance?
No
Check IC1201
No
Does disc rotate normally?
No
Is lead-in switch turned on in the TEST mode when the pickup is on the innermost periphery (Is the pin 6 of OC1401 on L level?)
No
Check SW1953, mechanism switch PWB soldering joint, and CNP1601 pin 1 periphery.
Yes
Is an attempt to read repeatedly the TOC section of low reflection disc made?
No
Since the TOC section has not been recorded on the new disc, replace it with recorded low reflection disc.
Yes
Check the position as stated in item "lead-in switch position measurement mode" (high reflection disc adjustment).

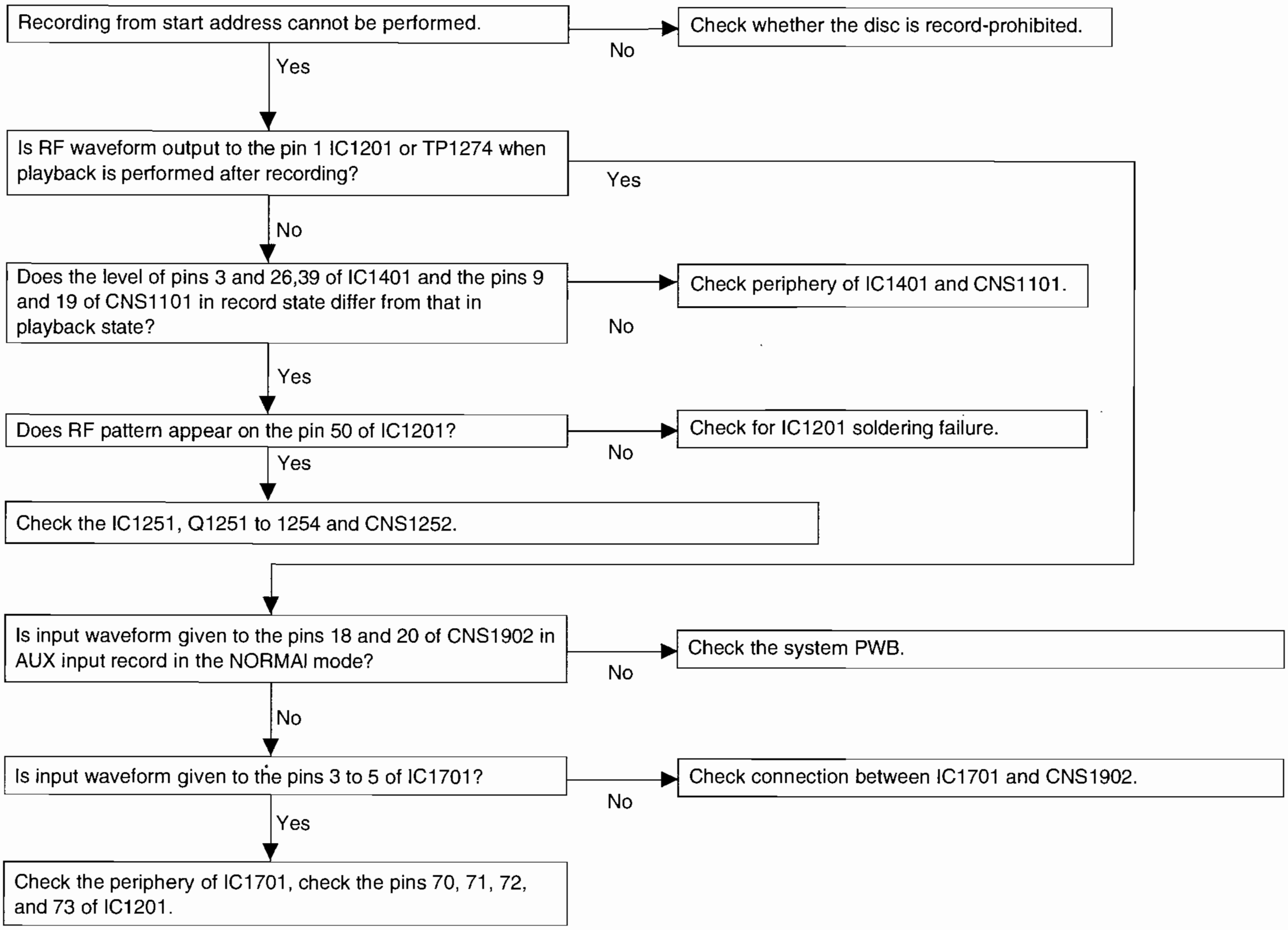
• Audio playback circuit

When sound is not output although the playback time display advances during playback in the normal mode.


Is audio output waveform observed on the pins 24 to 26 of IC1701?
No
Check the pins 70, 71, 72 and 74 of IC1201, and the pins 12, 16, 17, and 19 of IC1701.
Yes
Is audio output waveform observed on the pins 22 and 24 of CNS1901?
No
Check connection between IC1701 and CNS1901.
Yes
Check the main PWB.

• Record and playback operation

Insert the low reflection disc, and after verifying the audio output in the normal mode playback set the record/playback TEST mode



Recording from start address cannot be performed.

Check whether the disc is record-prohibited.

Is RF waveform output to the pin 1 IC1201 or TP1274 when playback is performed after recording?

Does the level of pins 3 and 26,39 of IC1401 and the pins 9 and 19 of CNS1101 in record state differ from that in playback state?

Check periphery of IC1401 and CNS1101.

Does RF pattern appear on the pin 50 of IC1201?

Check for IC1201 soldering failure.

Check the IC1251, Q1251 to 1254 and CNS1252.

Is input waveform given to the pins 18 and 20 of CNS1902 in AUX input record in the NORMAl mode?

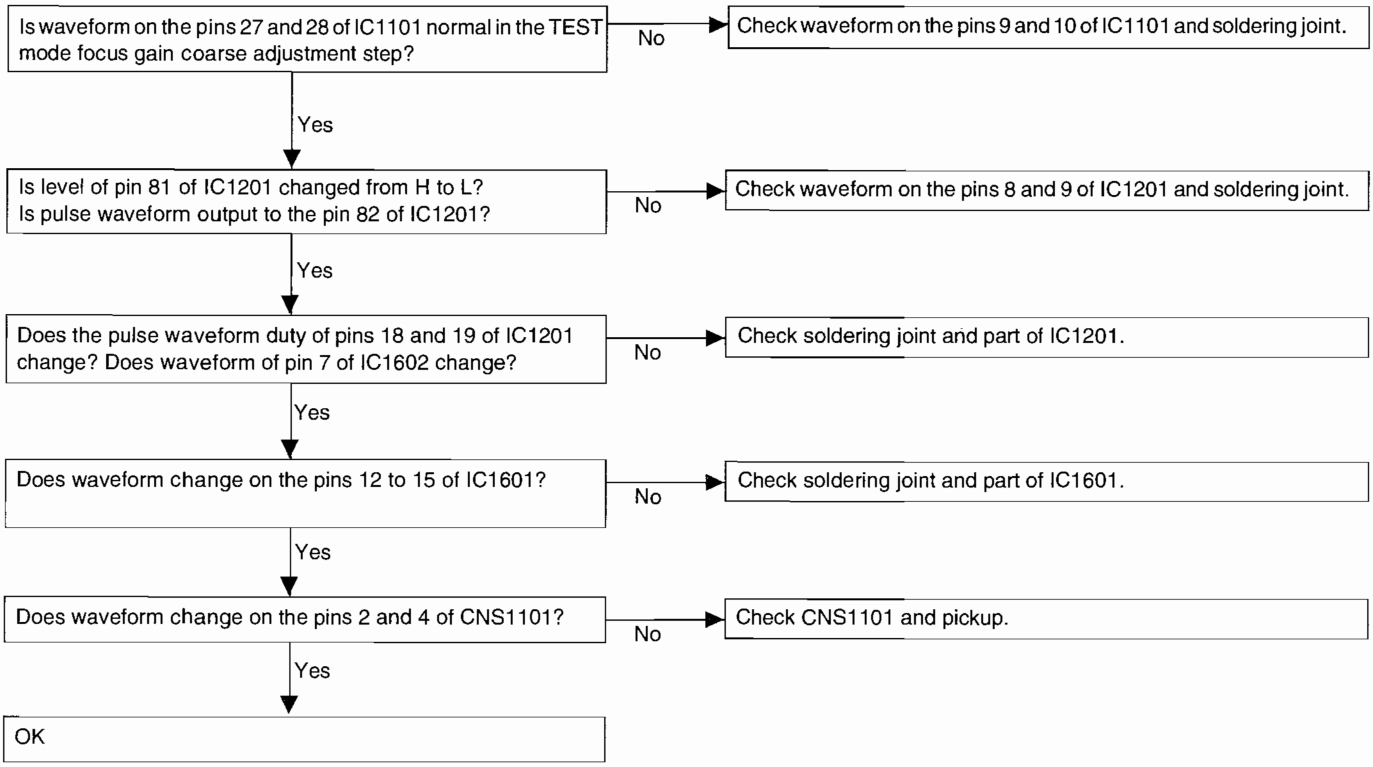
Check the system PWB.

Is input waveform given to the pins 3 to 5 of IC1701?

Check connection between IC1701 and CNS1902.

Check the periphery of IC1701, check the pins 70, 71, 72, and 73 of IC1201.

• Focus servo failure



Is waveform on the pins 27 and 28 of IC1101 normal in the TEST mode focus gain coarse adjustment step?

Check waveform on the pins 9 and 10 of IC1101 and soldering joint.

Is level of pin 81 of IC1201 changed from H to L?
Is pulse waveform output to the pin 82 of IC1201?

Check waveform on the pins 8 and 9 of IC1201 and soldering joint.

Does the pulse waveform duty of pins 18 and 19 of IC1201 change? Does waveform of pin 7 of IC1602 change?

Check soldering joint and part of IC1201.

Does waveform change on the pins 12 to 15 of IC1601?

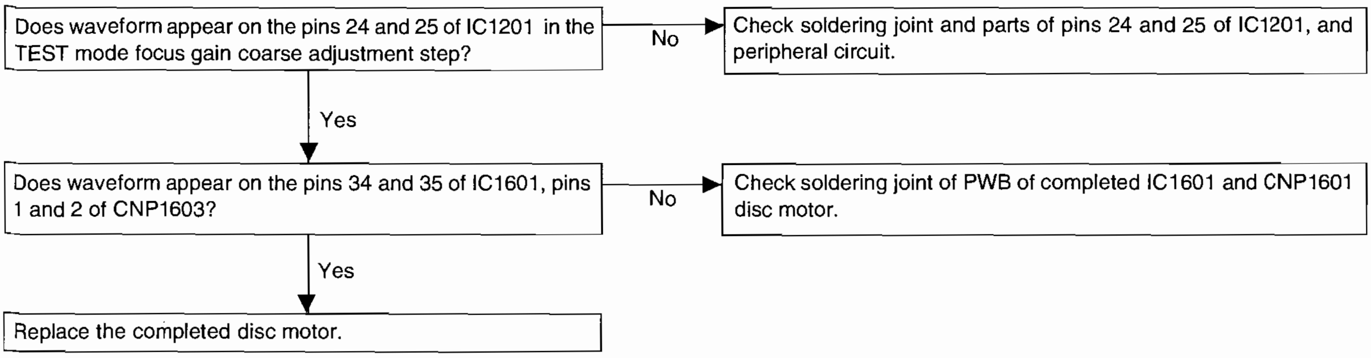
Check soldering joint and part of IC1601.

Does waveform change on the pins 2 and 4 of CNS1101?

Check CNS1101 and pickup.

OK

• Disc motor fails to run



Does waveform appear on the pins 24 and 25 of IC1201 in the TEST mode focus gain coarse adjustment step?

No → Check soldering joint and parts of pins 24 and 25 of IC1201, and peripheral circuit.

Yes ↓

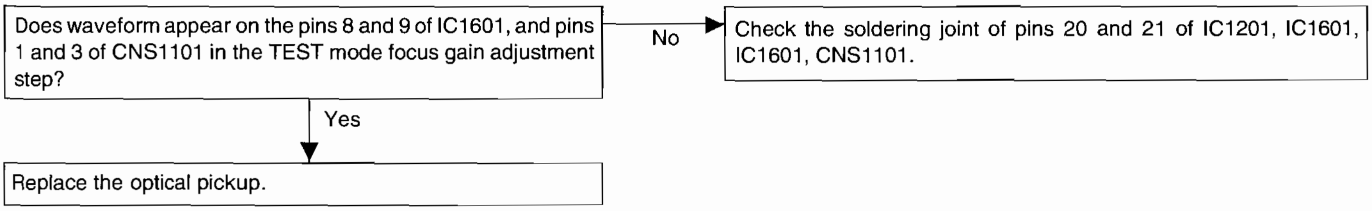
Does waveform appear on the pins 34 and 35 of IC1601, pins 1 and 2 of CNP1603?

No → Check soldering joint of PWB of completed IC1601 and CNP1601 disc motor.

Yes ↓

Replace the completed disc motor.

• Tracking servo failure



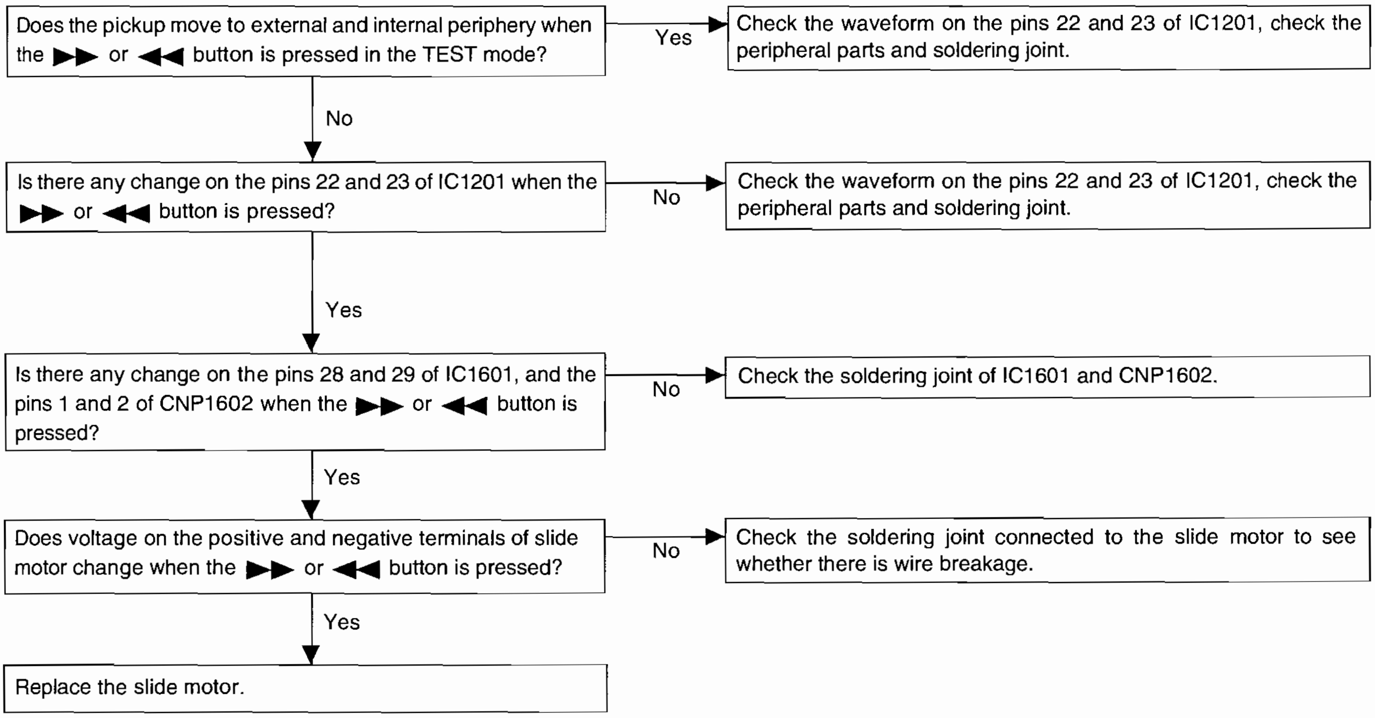
Does waveform appear on the pins 8 and 9 of IC1601, and pins 1 and 3 of CNS1101 in the TEST mode focus gain adjustment step?

No → Check the soldering joint of pins 20 and 21 of IC1201, IC1601, IC1601, CNS1101.

Yes ↓

Replace the optical pickup.

• Slide servo failure



Does the pickup move to external and internal periphery when the ▶▶ or ◀◀ button is pressed in the TEST mode?

Yes → Check the waveform on the pins 22 and 23 of IC1201, check the peripheral parts and soldering joint.

No ↓

Is there any change on the pins 22 and 23 of IC1201 when the ▶▶ or ◀◀ button is pressed?

No → Check the waveform on the pins 22 and 23 of IC1201, check the peripheral parts and soldering joint.

Yes ↓

Is there any change on the pins 28 and 29 of IC1601, and the pins 1 and 2 of CNP1602 when the ▶▶ or ◀◀ button is pressed?

No → Check the soldering joint of IC1601 and CNP1602.

Yes ↓

Does voltage on the positive and negative terminals of slide motor change when the ▶▶ or ◀◀ button is pressed?

No → Check the soldering joint connected to the slide motor to see whether there is wire breakage.

Yes ↓

Replace the slide motor.

FUNCTION TABLE OF IC

IC901 RH-iX0237AFZZ: System Control Microcomputer (IX0237AW) (1/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
1*	P77/AN7	KEY1	Output	Not used
2	P76/AN6	KEY2	Input	Key entry
3	P75/AN5	KEY3	Input	Key entry
4*	P74/AN4	—	Output	Not used
5	P73/AN3	INI	Input	Initial setting entry
6	P72/AN2	JOG_AD	Input	Jog dial entry
7*,8*	P71/AN1,P70/AN0	—	Output	Not used
9*	PB3	—	Output	Not used
10	PB2/DA	DIG SEL1	Output	Digital signal selector selection signal
11*	P57/SRDY3/AN15	DIG SEL2	Output	Not used
12*	P56/SCLK3/AN14	—	Output	Not used
13*	P55/SOUT3/AN13	—	Output	Not used
14	P54/SIN3/AN12	DAC_MODE	Output	Externally provided DAC/ADC serial interface mode signal
15	P52/SRDY2/AN11	DAC_CLK/EX	Output	Externally provided DAC/ADC serial interface clock signal
16	P52/SCLK2/AN10	DAC_DATA/EX	Output	Externally provided DAC/ADC serial interface clock signal
17*	P51/SOUT2/AN9	—	Output	Not used
18	P50/SIN2/AN8	DFS0/DFS1	Input	EMPHASIS information from MD
19	P67/SRDY1/CS/ SCLK12	DSTRB	Input	MD serial interface strobe signal
20	P66/SCLK1	DSCK	Output	MD serial interface clock signal
21	P65/SOUT1	K-DATA	Output	MD serial interface transmission signal
22	P64/SIN1	MD-DATA	Input	MD serial interface reception signal
23	P63/CNTR1	MD-LO/EJ	Output	MD loading power voltage selection signal
24*	P62/CNTR0	—	Output	Not used
25*	P61/PWM	—	Output	Not used
26*	P60	—	Output	Not used
27*	P47/T3OUT	—	Output	Not used
28*	P46/T1OUT	—	Output	Not used
29	P45/INT1/2CR	P IN	Input	Power failure detection
30*	P44/INT4	P.CNT	Output	Power control
31	P41	P-OUT	Output	MD power failure detection signal
32	P42/INT2	RX-IN	Input	Remote control loght reception signal
33	P41	P-MUTE	Output	Audio mute control signal
34	P40/INT0	—	Input	GND
35	RESET	RESET	Input	RESET signal entry
36	PB1/Xcin	Xcin	Input	Sub clock IN connection (32.7k)
37	PB0/Xcout	Xcout	Output	Sub clock OUT connection (32.7k)
38	Xin	Xin	Input	Main clock IN connection (8M)
39	Xout	Xout	Output	Main clock OUT connection (8M)
40	VSS	VSS	Input	GND
41	P27	SERCH	Output	CD to MD search monitor signal
42	P26	LOAD	Input	MD loading detection
43	P25	S-ID	Output	CD to MD start ID signal
44	P24	MD RESET	Output	RESET signal to MD
45-54	P23/DIG19- P12/DIG10	UDIG0-UDIG9	Output	Digit for FL drive
55,56	P11/SEG41/DIG9, P10/SEG40/DIG8	UDIG10,UDIG11	Output	Digit for FL drive
57-60	P07/SEG39/DIG7- P04/SEG36/DIG4	UDIG12-UDIG15	Output	Digit for FL drive
61-64	P05/SEG35/DIG3- P00/SEG33/DIG0	S35-S32	Output	Segment for FL drive
65-72	P37/SEG31- P30/SEG25	S31-S25	Output	Segment for FL drive

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC901 RH-iX0237AFZZ: System Control Microcomputer (IX0237AW) (2/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
72-80	P97/SEG23-P90/SEG16	S0-S8	Output	Segment for FL drive
81-88	P87/SEG15-P80/SEG8	S9-S16	Output	Segment for FL drive
89,90	PA7/SEG7, PA6/SEG6	S17,S18	Output	Segment for FL drive
91	VCC	VCC	Input	+5V
92-97	PA5/SEG5-PA0/SEG0	S19-S24	Output	Segment for FL drive
98	VEE	VEE	Input	-30V
99	AVSS	AVSS	Input	GND
100	VREF	VREF	Input	+5V

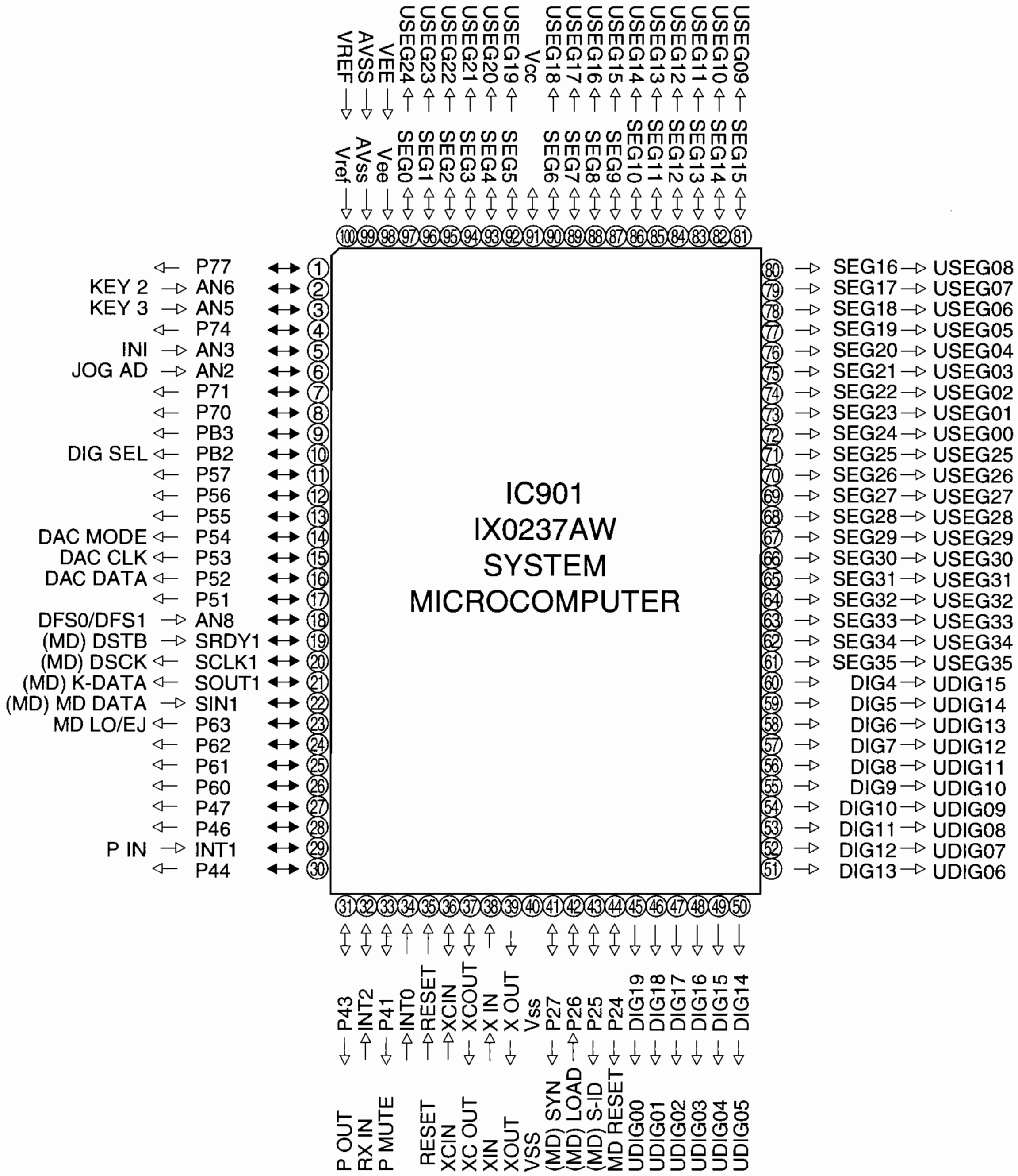

IC901
IX0237AW
SYSTEM
MICROCOMPUTER
VREF
AVSS
VEE
USEG24
USEG23
USEG22
USEG21
USEG20
USEG19
Vcc
USEG18
USEG17
USEG16
USEG15
USEG14
USEG13
USEG12
USEG11
USEG10
USEG09
Vref
AVss
Vee
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
SEG10
SEG11
SEG12
SEG13
SEG14
SEG15
P77
KEY 2 AN6
KEY 3 AN5
P74
INI AN3
JOG AD AN2
P71
P70
PB3
DIG SEL PB2
P57
P56
P55
DAC MODE P54
DAC CLK P53
DAC DATA P52
P51
DFS0/DFS1 AN8
(MD) DSTB SRDY1
(MD) DSCK SCLK1
(MD) K-DATA SOUT1
(MD) MD DATA SIN1
MD LO/EJ P63
P62
P61
P60
P47
P46
P IN INT1
P44
SEG16 USEG08
SEG17 USEG07
SEG18 USEG06
SEG19 USEG05
SEG20 USEG04
SEG21 USEG03
SEG22 USEG02
SEG23 USEG01
SEG24 USEG00
SEG25 USEG25
SEG26 USEG26
SEG27 USEG27
SEG28 USEG28
SEG29 USEG29
SEG30 USEG30
SEG31 USEG31
SEG32 USEG32
SEG33 USEG33
SEG34 USEG34
SEG35 USEG35
DIG4 UDIG15
DIG5 UDIG14
DIG6 UDIG13
DIG7 UDIG12
DIG8 UDIG11
DIG9 UDIG10
DIG10 UDIG09
DIG11 UDIG08
DIG12 UDIG07
DIG13 UDIG06
P43
INT2
P41
INT0
RESET
XCIN
XCOUT
X IN
X OUT
Vss
P27
P26
P25
P24
DIG19
DIG18
DIG17
DIG16
DIG15
DIG14
P OUT
RX IN
P MUTE
RESET
XCIN
XC OUT
XIN
XOUT
VSS
(MD) SYN
(MD) LOAD
(MD) S-ID
MD RESET
UDIG00
UDIG01
UDIG02
UDIG03
UDIG04
UDIG05

Figure 46 BLOCK DIAGRAM OF IC

IC1101 VHiiR3R55//-1:RF Signal Control (IR3R55)

Pin No.	Terminal Name	Function
1	RF1	RF signal input terminal 1 Input of RF signal output of pickup
2	RF2	RF signal input terminal 2 Input of RF signal output of pickup
3	RF3	RF signal input terminal 3 Input of RF signal output of pickup
4	RF4	RF signal input terminal 4 Input of RF signal output of pickup
5	REFI	Reference voltage amp. input terminal
6	REFO	Reference voltage amp. output terminal
7	RFADD	RF1 to 4 resistance addition output terminal
8	TCGI	Track cross detection signal amp. input terminal for groove
9	AIN	Servo signal amp. (focus servo system) inversion input terminal
10	BIN	Servo signal amp. (focus servo system) inversion input terminal
11	EIN	Servo signal amp. (tracking servo system) inversion input terminal
12	FIN	Servo signal amp. (tracking servo system) inversion input terminal
13	BIAS	Bias input terminal
14	AVCC	Analog section power terminal
15*	VSTBY	Logic signal output terminal (STBY signal inversion signal is output.)
16*	XDISC	Logic signal output terminal (DISC signal inversion signal is output.)
17*	XSGAIN	Logic signal output terminal (SGAIN signal inversion signal is output.)
18	AGND	Analog section GND terminal
19	DGND	Digital section GND terminal
20	DTEMP	Chip temperature detection terminal
21	LATCH	Latch signal input terminal
22	CLOCK	Clock signal input terminal
23	DATA	Serial data input terminal
24	DVCC	Digital section power terminal
25	FOUT	Servo signal amp. (tracking servo system) output terminal
26	EOUT	Servo signal amp. (tracking servo system) output terminal
27	BOUT	Servo signal amp. (focus servo system) output terminal
28	AOUT	Servo signal amp. (focus servo system) output terminal
29	TCGO	Track cross detection signal amp. output terminal for groove
30	WBO	Comparator output terminal for ADIP signal binary-coding
31	22KI	Comparator input terminal for ADIP signal binary-coding
32	22KO	ADIP signal HPF amp. output terminal
33	ADLPFO	ADIP signal LPF amp. output terminal
34*	NC	NC
35	ADIPO	ADIP signal preamp. output terminal
36	ADIPI	ADIP signal AGC amp. output terminal
37	ADAGC	ADIP signal AGC smoothing capacitor connection terminal
38	ADAGI	ADIP signal AGC amp. input terminal
39	RF2-1	RF1 and RF2 difference signal
40	EFMO	RF signal preamp. output terminal
41*	WFMI	RF signal AGC amp. output terminal
42	AVCC	Analog section power terminal
43	AGND	Analog section GND terminal
44	EFMAGC	EFM signal AGC smoothing capacitor connection terminal
45	EFMAGI	EFM signal AGC amp. output terminal
46*	ATTR	Pins 47 and 48 output signal attenuation terminal
47	GOUT	Output of signal of RF1+RF2-RF3-RF4 for groove
48	POUT	Rf1 to 4 resistance addition output for pit

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1201 VHiLR376481-1:ENDEC/ATRAC (LR376481) (1/2)

Pin No.	Terminal Name	Input/Output	Function
1*	EFMMON	Output	EFM monitor output
2	AVCC	—	Analog power
3	EFMI	Input	EFM signal input from RF amp.
4	AGND	—	Analog GND
5	AIN	Input	Focus error signal A
6	EIN	Input	Tracking error signal E
7	TCG	Input	Track cross signal
8	BIN	Input	Focus error signal B
9	FIN	Input	Tracking error signal F
10*	VBAT	Input	Power voltage detection signal for constant voltage servo
11	WBI	Input	ADIP wobble signal
12	VDD1	—	Digital power
13	DGND	—	Digital GND
14,15	TEST0,TEST1	Input	Input for test. Connection to GND in case of normal use
16	TEST2	Input	Input for test. Endecode/servo mode and ATRAC mode selection
17	X176KO	Output	Clock output. f=176.4 kHz (4fs)
18	FODRF	Output	Focus servo forward output. PWM
19	FODRR	Output	Focus servo reverse output. PWM
20	TRDRF	Output	Tracking servo forward output. PWM
21	LATCH	Output	Tracking servo reverse output. PWM
22	CLOCK	Output	Slide servo forward output. PWM
23	DATA	Output	Slide servo reverse output. PWM
24	DVCC	Output	Spindle servo forward output or spindle servo output. PWM
25	FOUT	Output	Spindle servo reverse output or spindle rotation (forward/reverse)selection
26	EOUT	Output	Address output to external D-RAM. ADR3
27	BOUT	Output	Address output to external D-RAM. ADR2
28	AOUT	Output	Address output to external D-RAM. ADR1
29	TCGO	Output	Address output to external D-RAM. ADR0 (LSB)
30*	WBO	Output	Address output to external D-RAM. ADR10 (MSB)
31	22KI	—	Power supply for DRAM interface
32	22KO	Output	Address output to external D-RAM. ADR4
33	ADLPFO	Output	Address output to external D-RAM. ADR5
34	NC	Output	Address output to external D-RAM. ADR6
35	ADIPO	Output	Address output to external D-RAM. ADR7
36	ADIPI	Output	Address output to external D-RAM. ADR8
37	ADAGC	Output	Data output enable signal output to external D-RAM
38	ADAGI	—	Digital GND
39	RF2-1	Output	Column address strobe signal output to external D-RAM
40	EFMO	In/Output	Data input/output from and to external D-RAM. D2
41	WFMI	In/Output	Data input/output from and to external D-RAM. D3 (MSB)
42	AVCC	Output	Data input/output from and to external D-RAM. ADR9
43	AGND	Output	Low address strobe signal output to external D-RAM
44	EFMAGC	Output	Data write enable signal output to external D-RAM
45	EFMAGI	In/Output	Data input/output from and to external D-RAM. D1
46	ATTR	In/Output	Data input/output from and to external D-RAM. D0 (LSB)
47*	GOUT	Output	Track cross signal
48*	POUT	Output	ADIP CRC error flag monitor output
49*	PLCK	Output	EFM PLL clock output in playback mode
50	EFM0	Output	EFM signal output in record mode. C1F (C1 error flag) monitor output in playback mode
51*	X700KO	Output	Clock output. f = 705.6 kHz. Clock output is not performed when RSTX = 0.
52*	EXPORT0	Output	Microcomputer extension output port 0
53*	EXPORT1	Output	Microcomputer extension output port 1

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1201 VHiLR376481-1:ENDEC/ATRAC (LR376481) (2/2)

Pin No.	Terminal Name	Input/Output	Function
54	TESO1	Output	PLLLR. Microcomputer extension output port 2 in case of selection
55	TESO3	In/Output	PLLOSC. Microcomputer extension output port 3 in case of selection
56	TEST4	In/Output	EXTCLK. Microcomputer extension output port 4 in case of selection
57*	CDDATA	In/Output	High speed dubbing CD data input. Microcomputer extension output port 5 in case of selection
58*	CDLRCK	In/Output	High speed dubbing CD LR data input. Microcomputer extension output port 6 in case of selection
59*	CDBCLK	In/Output	High speed dubbing CD bit data input. Microcomputer extension output port 7 in case of selection
60*	VXI	Input	Vari-pitch PLL clock input
61*	VPO	Output	Vari-pitch PLL phase error output
62	VDD1	—	Digital power
63	DGND	—	Digital GND
64	XI	Input	Oscillation circuit input. 33.8688 MHz
65	XO	Output	Oscillation circuit input. 33.8688 MHz
66	DIN	Input	Digital input signal
67	DOUT	Output	Digital output signal
68	VDD3	—	Power for internal PLL
69	DGND	—	Digital GND
70	LRCK	Output	Music data Lch/Rch selection output
71	BLCK	Output	Music data shift clock
72	DFCK	Output	AD/DA converter digital filter clock. 256 Fs
73	ADDATA	Input	Audio data input
74	DADATA	Output	Audio data output
75*	FEMON	Output	Focus error signal monitor output
76*	TOTMON	Output	Total signal monitor output
77*	TEMON	Output	Tracking error signal monitor output
78*	SBCK	Input	DIN subcode read clock. EIAJ CP-309 Format
79*	SBO	Output	DIN subcode serial data. EIAJ CP-309 Format
80*	SBSY	Output	DIN subcode block sync signal. EIAJ CP-309 Format
81	SFSY	Output	DIN subcode frame sync signal. EIAJ CP-309 Format
82	FOK	Output	Focus OK detection signal. "0" : Focus OK
83	SENSE	Output	Servo status detection signal. "1": Auto-move, auto-jump, auto-focus retraction
84	COUT	Output	Track cross signal output
85	MCCK	Output	Microcomputer clock output. Clock output is performed also when RSTX = 0.
86	DINTX	Output	System controller interface interruption request output terminal
87	VDD1	—	Digital power
88	DGND	—	Digital GND
89	RSTX	Input	Chip reset input. "L": Reset
90	SYD0	In/Output	System controller interface data bus terminal (LSB)
91~96	SYD1~SYD6	In/Output	System controller interface data bus terminal
97	SYD7	In/Output	System controller interface data bus terminal (MSB)
98	SYWRX	Input	System controller interface register writing pulse input
99	SYRDX	Input	System controller register read pulse input
100	SYRS	Input	System controller interface register selection input

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1401 RX-iX0232AWZZ:MD System Microcomputer (IX0232AW) (1/2)

Pin No.	Terminal Name	Input/Output	Function
1*	P96/ANEX1	Output	Not used
2*	P95/ANEX0	Output	Not used
3	P94/DA1	Output	LDVAR (laser power adjustment output)
4*	P93/DA0	Output	ADJS (for automatic adjustment step check)
5*	P92/TB2IN	Output	Not used
6	P91/TB1IN	Input	LD SW CK input (interruption input only in single state)
7	P90/TB0IN	Input	ERR input (monitor PLL UNLOCK)
8	BYTE	Input	GND
9	CNVss	Input	GND
10*	P87/XCIN	Output	ST-ID Output
11*	P86/XOUT	Output	MD search output
12	RESET	Input	RESETInput
13*	XOUT	—	Extal clock output
14	Vss	—	GND
15	XIN	Input	EXTAL (8.4672 MHz)
16	Vcc	—	+ 3.15V
17	P85/NMI	Input	Connect +B
18	P84/INT2	Input	DINT (interruption input from MD LSI)
19	P83/INT1	Input	DSENSE (servo sense input from MD LSI)
20	P82/INT0	Input	ST-ID Input (MD-ON)
21	P81/TA4IN	Input	CD search input (syncro REC suspension input from MD LSI)
22	P80/TA4OUT	Output	MD RSW Output
23*	P77/TA3IN	Input	FSW1 (SW power frequency selection)
24	P76/TA3OUT	Output	Vari-pitch correspondence given (H)/not given (L)
25	P75/TA2IN	Input	P-DOWN (power failure detection)
26	P74/TA2OUT	Output	HDON (magnetic head current ON/OFF output)
27	P73/TA1IN	Output	LD+ (loading motor + control output)
28	P72/TA1OUT	Output	LD- (loading motor + control output)
29	P71/TA0IN	Input	CIN (track count signal input)
30	P70/TA0OUT	Input	INN SW (inner SW detection input)
31	P67/TXD1	Output	R-DATA
32	P66/RXD1	Output	R-LATCH
33	P65/CLK1	Output	R-CLK
34	P64/CTS1/RTS1/ CTS0/CLKS1	Output	DSTB (system controller communication enable and communication beingexecuted)
35	P63/TXD0	Output	MD DATA (MD Data Output)
36	P62/RXD0	Input	K DATA (system controller data input)
37	P61/CLK0	Input	DSCK (system controller communication clock input)
38*	P60/CTS0/RTS0	Input	4M/16M DRAM selection input
39	P57/RDY/CLKOUT	Output	R/P output (REC/PLAY selection)
40	P56/ALE	Input	FOK (focus servo status monitor input)
41*	WFMI	Input/Output	Not used
42	AVCC	Output	S2 Ouput
43	AGND	Output	S1 Output
44	EFMAGC	Output	SYRS (MD-LSI register selection signal output)
45	EFMAGI	Output	SYRD (MD-LSI read signal output)
46	ATTR	Output	SYWR (MD-LSI right signal output)
47	GOUT	In/Output	SYS D7 (data bus 7)
48	POUT	In/Output	SYS D6 (data bus 6)
49	PLCK	In/Output	SYS D5 (data bus 5)
50	EFM0	In/Output	SYS D4 (data bus 4)
51	X700KO	In/Output	SYS D3 (data bus 3)

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1401 RX-iX0232AWZZ:MD System Microcomputer (IX0232AW) (2/2)

Pin No.	Terminal Name	Input/Output	Function
52	P42/A18	In/Output	SYS D2 (data bus 2)
53	P41/A17	In/Output	SYS D1 (data bus 1)
54	P40/A16	In/Output	SYS D0 (data bus 0)
55*	P37/A15	Output	Not used
56*	P36/A14	Output	Not used
57*	P35/A13	Output	Not used
58	P34/A12	Output	EEPRO (EEPROM protection cancel)
59	P33/A11	Output	EPCS (EEPROM chip selector output)
60	P32/A10	In/Output	EEPD (EEPROM sirial data output)
61	P31A9	Output	EEPK (EEPROM sirial colck output)
62	Vcc	Input	+ 3.15V
63*	P30/A8	Output	Not used
64	Vss	—	GND
65*	P27/A7	Output	L3 DATA (soft serial communication, 2 modes provided, LSB fast)
66*	P26/A6	Output	L3 MODE (soft serial communication, 2 modes provided, LSB fast)
67*	P25/A5	Output	L3 CLK (soft serial communication, 2 modes provided, LSB fast)
68*	P24/A4	Output	Not used
69*	P23/A3	Output	Not used
70	P22/A2	Output	PCNT0 output
71*	P21/A1	Output	Not used
72	P20/A0	Output	LDON output (H: ON)
73	P17/D15	Output	ANLPTR output
74*	P16/D14	Output	ADPON output (for CK)
75*	P15/D13	Output	DAPON output (for CK)
76	P14/D12	Output	DFS0 output
77	P13/D11	Output	DFS1 output
78*	P12/D10	Output	DIG EX output (for CK)
79*	P11/D9	Output	DIG CD output (for CK)
80	P10/D8	Output	XRST (system reset output)
81*	P07/D7	Output	AD MUTE output (for CK)
82*	P06/D6	Output	EMPHA output (for CK)
83*	P05/D5	Output	DA MUTE output (for CK)
84	P04/D4	Output	MUTE output
85*	P03/D3	Output	DOUTM output (for CK)
86	P02/D2	Input	TEST2 (special mode selection 2)
87	P01/D1	Input	TEST1 (special mode selection 1)
88	P00/D0	Input	TEST0 (special mode selection 0)
89	P107/AN7/KI3	Input	AVCK3 (special mode monitor input)
90	P106/AN6/KI2	Input	AVCK2 (AD/DA section 3.1V monitor input)
91	P105/AN5/KI1	Input	AVCK1 (DOUT section 5V monitor input)
92	P104/AN4/KI0	Input	DTEMP (temperature detection input)
93	P103/AN3	Input	MINF (disc type/REC input)
94	P102/AN2	Input	TEST K1 (test key input 1)
95	P101/AN1	Input	TEST K2 (test key input 2)
96	AVss	—	GND
97	P100/AN0	Input	HINF (mechanism position/HEAD position)
98	VREF	—	+ 3.15V
99	AVcc	—	+ 3.15V
100	P97/ADTRG	Input	Connect +B

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1101 VHiIR3R55//-1:RF Signal Control (IR3R55)

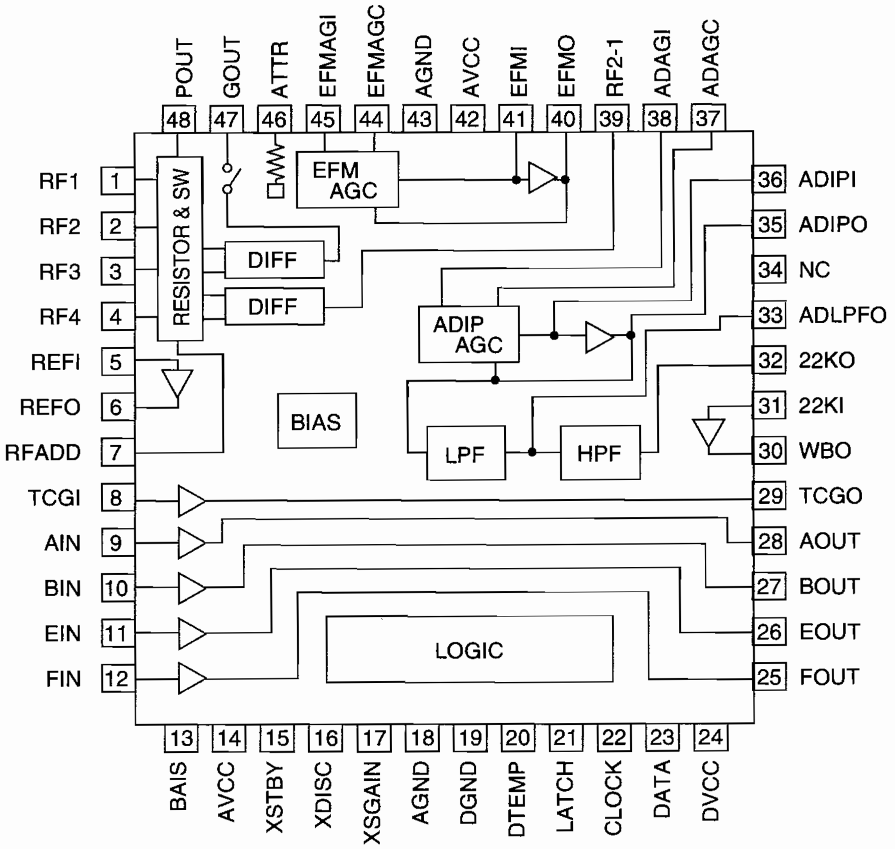

48 POUT
47 GOUT
46 ATTR
45 EFMAGI
44 EFMAGC
43 AGND
42 AVCC
41 EFMI
40 EFMO
39 RF2-1
38 ADAGI
37 ADAGC
1 RF1
2 RF2
3 RF3
4 RF4
5 REFI
6 REFO
7 RFADD
8 TCGI
9 AIN
10 BIN
11 EIN
12 FIN
36 ADIPI
35 ADIPO
34 NC
33 ADLPFO
32 22KO
31 22KI
30 WBO
29 TCGO
28 AOUT
27 BOUT
26 EOUT
25 FOUT
13 BAIS
14 AVCC
15 XSTBY
16 XDISC
17 XSGAIN
18 AGND
19 DGND
20 DTEMP
21 LATCH
22 CLOCK
23 DATA
24 DVCC
RESISTOR & SW
EFM AGC
DIFF
DIFF
ADIP AGC
BIAS
LPF
HPF
LOGIC

Figure 52-1 BLOCK DIAGRAM OF IC

IC1201 VHiLR376481-1:ENDEC/ATRAC (LR376481)

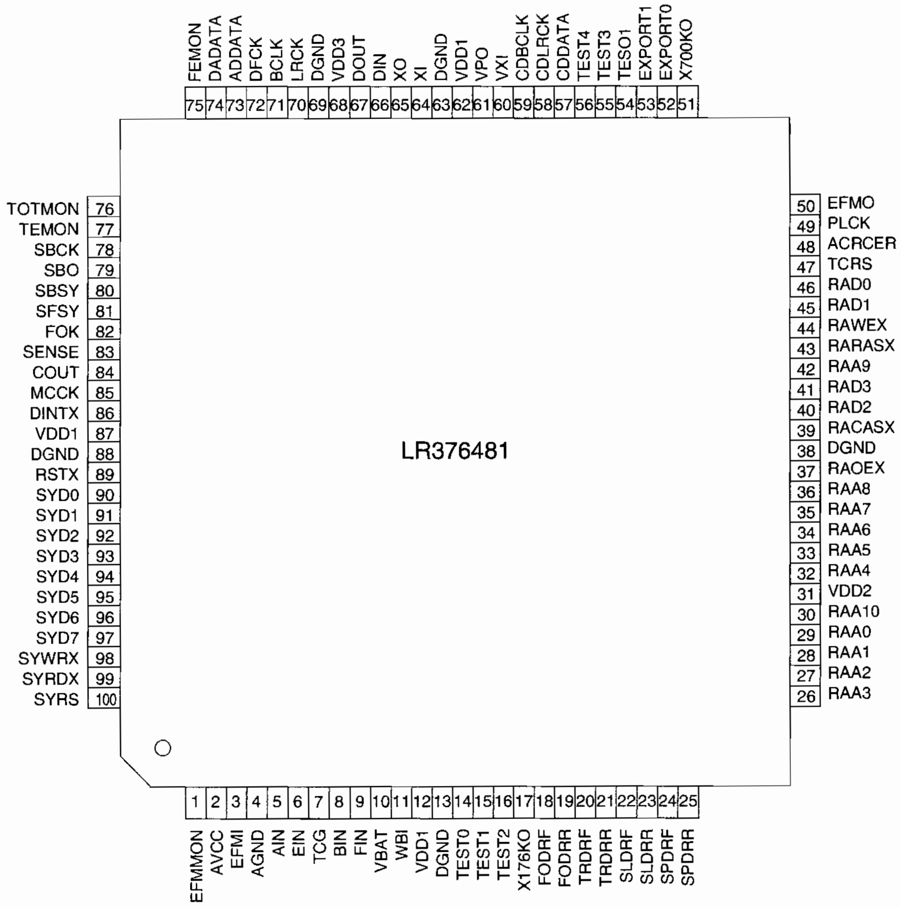

75 FEMON
74 DADATA
73 ADDATA
72 DFCK
71 BCLK
70 LRCK
69 DGND
68 VDD3
67 DOUT
66 DIN
65 XO
64 XI
63 DGND
62 VDD1
61 VPO
60 VXI
59 CDBCLK
58 CDLRCK
57 CDDATA
56 TEST4
55 TEST3
54 TESO1
53 EXPORT1
52 EXPORT0
51 X700KO
76 TOTMON
77 TEMON
78 SBCK
79 SBO
80 SBSY
81 SFSY
82 FOK
83 SENSE
84 COUT
85 MCCK
86 DINTX
87 VDD1
88 DGND
89 RSTX
90 SYD0
91 SYD1
92 SYD2
93 SYD3
94 SYD4
95 SYD5
96 SYD6
97 SYD7
98 SYWRX
99 SYRDX
100 SYRS
50 EFMO
49 PLCK
48 ACRCER
47 TCRS
46 RAD0
45 RAD1
44 RAWEX
43 RARASX
42 RAA9
41 RAD3
40 RAD2
39 RACASX
38 DGND
37 RAOEX
36 RAA8
35 RAA7
34 RAA6
33 RAA5
32 RAA4
31 VDD2
30 RAA10
29 RAA0
28 RAA1
27 RAA2
26 RAA3
LR376481
1 EFMMON
2 AVCC
3 EFMI
4 AGND
5 AIN
6 EIN
7 TCG
8 BIN
9 FIN
10 VBAT
11 WBI
12 VDD1
13 DGND
14 TEST0
15 TEST1
16 TEST2
17 X176KO
18 FODRF
19 FODRR
20 TRDRF
21 TRDRR
22 SLDRF
23 SLDRR
24 SPDRF
25 SPDRR

Figure 52-2 BLOCK DIAGRAM OF IC

SHARP PARTS GUIDE

MODEL MD-R1HMK2

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following information.

1. MODEL NUMBER
2. REF. No.
3. PART NO.
4. DESCRIPTION

★ MARK: SPARE PARTS-DELIVERY SECTION

For U.S.A. only

Contact your nearest SHARP Parts Distributor to order.

For location of SHARP Parts Distributor,
Please call Toll-Free;
1-800-BE-SHARP

Explanation of capacitors/resistors parts codes

Capacitors

VCC	Ceramic type
VCK	Ceramic type
VCT	Semiconductor type
VC • • MF	Cylindrical type (without lead wire)
VC • • MN	Cylindrical type (without lead wire)
VC • • TV	Square type (without lead wire)
VC • • TQ	Square type (without lead wire)
VC • • CY	Square type (without lead wire)
VC • • CZ	Square type (without lead wire)
VC • • • • • • • • • J	The 13th character represents capacity difference. ("J" ±5%, "K" ±10%, "M" ±20%, "N" ±30%, "C" ±0.25 pF, "D" ±0.5 pF, "Z" +80-20%.)

If there are no indications for the electrolytic capacitors, error is ±20%.

Resistors

VRD	Carbon-film type
VRS	Carbon-film type
VRN	Metal-film type
VR • • MF	Cylindrical type (without lead wire)
VR • • MN	Cylindrical type (without lead wire)
VR • • TV	Square type (without lead wire)
VR • • TQ	Square type (without lead wire)
VR • • CY	Square type (without lead wire)
VR • • CZ	Square type (without lead wire)
VR • • • • • • • • • J	The 13th character represents error. ("J" ±5%, "F" ±1%, "D" ±0.5%.)

If there are no indications for other parts, the resistors are ±5% carbon-film type.

NOTE:

Parts marked with "⚠" are important for maintaining the safety of the set.
Be sure to replace parts with specified ones for maintaining the safety and performance of the set.

INTEGRATED CIRCUITS

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
IC101	VHINJM4560D-1	J	AH	Ope Amp.,NJM4560D
IC201	VHIUDA1340/-1	J	BA	AD/DA Converter,UDA1340
IC301	VHI74HCU04/-1	J	AF	Inverter,74HCU04
IC302	VHI74HC10AP-1	J	AF	NAND Gate,74HC10AP
IC501	VHIS81233YX-1	J	AG	Regulator,S81233YX
IC601	VHINJM4580D-1	J	AG	Line Amp.,NJM4580D
IC651	VHINJM4560D-1	J	AH	Ope Amp.,NJM4560D
IC901	RH-IX0237AWZZ	J	BE	System Microcomputer, IX0237AW
IC902	VHIPST9127/-1	J	AG	Reset,PST9127
IC1101	VHIIR3R55//-1	J	AQ	RF Signal,Processor,IR3R55
IC1201	VHILR376481-1	J	BD	ENDEC,LR376481
IC1202	RH-IX2474AFZZ	J	BF	4Mbit D-RAM,IX2474AF
IC1251	VHI74ACT02F-1	J	AF	Head Driver,74ACT02F
IC1401	RH-IX0232AWZZ	J	BA	MD System Microcomputer, IX0232AW
IC1402	VHIS29294A/-1	J	AH	E^2-PROM,S29294A
IC1601	VHIM56758FP-1	J	AM	5-CH Motor Driver,M56758FP
IC1801	VHIXC62EP32-1	J	AE	Regulator,XC62EP32
IC1906	VHITC7ST08F-1	J	AE	Invertor,TC7ST08F
IC1907	VHITC9246F/-1	J	AM	Invertor,TC9246F
IC1916	VHI74VHC08FT1	J	AF	AND Gate,74VHC08FT
IC1990	VHI74AC04FS-1	J	AF	µP Converter,74AC04FS

TRANSISTORS

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
Q451,452	VS2SC2878B/-1	J	AC	Silicon,NPN,2SC2878 B
Q501	VSKTA1266GR-1	J	AB	Silicon,PNP,KTA1266 GR
Q502	VS2SB562-C/-1	J	AD	Silicon,PNP,2SB562 C
Q503	VS2SD468-C/-1	J	AD	Silicon,NPN,2SD468 C
Q504	VS2SD2012Y/-1	J	AF	Silicon,NPN,2SD2012 Y
Q505	VSKRC102M//-1	J	AC	Digital,NPN,KRC102 M
Q506	VS2SD2394F/-1	J	AE	Silicon,NPN,2SD2394 F
Q601,602	VS2SC2878B/-1	J	AC	Silicon,NPN,2SC2878 B
Q653	VSKRC102M//-1	J	AC	Digital,NPN,KRC102 M
Q901,902	VSKTC3199GR-1	J	AB	Silicon,NPN,KTC3199 GR
Q1251,1252	VS2SK2909//-1	J	AE	FET,2SK2909
Q1253,1254	VS2SK1473//-1	J	AF	FET,2SK1473
Q1401	VSRN2404///-1	J	AC	Digital,PNP,RN2404
Q1402	VSRNC1404//-1	J	AB	Digital,NPN,RNC1404
Q1403	VSRN2404///-1	J	AC	Digital,PNP,RN2404
Q1404	VSRNC1404//-1	J	AB	Digital,NPN,RNC1404
Q1451	VSRNC1407//-1	J	AC	Digital,NPN,RNC1407
Q1601	VS2SA1314C/-1	J	AD	Silicon,PNP,2SA1314 C
Q1801	VS2SA1314C/-1	J	AD	Silicon,PNP,2SA1314 C
Q1802,1803	VSRN1406///-1	J	AB	Digital,NPN,RN1406
Q1807	VS2SA1314C/-1	J	AD	Silicon,PNP,2SA1314 C
Q1820	VS2SA1162G/-1	J	AB	Silicon,PNP,2SA1162 G
Q1821,1822	VSRNC1407//-1	J	AC	Digital,NPN,RNC1407

DIODES

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
D301	VHEMTZJ5R1B-1	J	AC	Zener,5.1V,MTZJ5.1B
D501	VHEMTZJ6R8B-1	J	AC	Zener,6.8V,MTZJ6.8B
D502	VHEMTZJ330B-1	J	AB	Zener,33V,MTZJ33B
D503,504	VHEMTZJ9R1B-1	J	AB	Zener,9.1V,MTZJ9.1B
D505	VHEMTZJ6R8A-1	J	AA	Zener,6.8V,MTZJ6.8A
D506	VHEMTZJ7R5B-1	J	AA	Zener,7.5V,MTZJ7.5B
D507	VHERD5R6JS2-1	J	AB	Zener,5.6V,RD5.6JS2
D508	VHEMTZJ270D-1	J	AA	Zener,27V,MTZJ270D
D509,510	VHD1SS133//-1	J	AA	Silicon,1SS133
D512,513	VHD1SS133//-1	J	AA	Silicon,1SS133
D551~555	VHDRL104A//-1	J	AB	Silicon,RL104A
D651	VHEMTZJ9R1B-1	J	AB	Zener,9.1V,MTZJ9.1B
D1251,1252	VHDSB0209CP-1	J	AC	Silicon,SB0209CP
D1990	VHD1SS372//-1	J	AD	Silicon,1SS372

TRANSFORMER

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
⚠ T551	RTRNP0176AWZZ	J	AY	Power

COILS

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
L101	VP-DHR22K0000	J	AB	0.22 µH
L201,202	VP-DH100K0000	J	AB	10 µH,Choke
L301,302	VP-DH100K0000	J	AB	10 µH,Choke
L901	VP-DH220K0000	J	AB	22 µH,Choke
L1101	VPBNN100K0000	J	AC	10 µH
L1102	VPBNNR47K0000	J	AC	0.47 µH
L1201	VPBNNR47K0000	J	AC	0.47 µH
L1203	VPBNN4R7K0000	J	AC	4.7 µH
L1251	VP-NM470K0000	J	AC	47 µH
L1601	RCILZ0016AWZZ	J	AD	1 µH
L1950	RCILZ0016AWZZ	J	AD	1 µH

VARIABLE RESISTORS

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
VR901	RVR-B0016AWZZ	J	AH	5 kohms (B),Volume [Aux-Volume]
VR981	RVR-C0003AWZZ	J	AH	1 kohm (C),Volume [Phones Level]

VIBRATORS

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
X901	RCRM-0012AWZZ	J	AF	Ceramic,4.19 MHz
X902	RCRSP0051AFZZ	J	AK	Crystal,32.768 kHz
XL1201	RCRSC0001AWZZ	J	AL	Crystal,33.8688 MHz

CAPACITORS

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
C102	VCKYTV1HF223Z	J	AA	0.022 µF,50V
C105,106	VCKYTV1HB221K	J	AA	220 pF,50V
C107,108	RC-GZA105AF1H	J	AB	1 µF,50V,Electrolytic
C109,110	VCKYTV1HB221K	J	AA	220 pF,50V
C113,114	VCCCTV1HH470J	J	AA	47 pF (CH),50V
C115,116	RC-GZA476AF1A	J	AB	47 µF,10V,Electrolytic
C117,118	RC-GZA107AF1A	J	AB	100 µF,10V,Electrolytic
C119	VCKYTV1HF223Z	J	AA	0.022 µF,50V
C201	RC-GZA107AF1A	J	AB	100 µF,10V,Electrolytic
C202,203	RC-GZA476AF1A	J	AB	47 µF,10V,Electrolytic
C206	RC-GZA105AF1H	J	AB	1 µF,50V,Electrolytic
C207	RC-GZA107AF1A	J	AB	100 µF,10V,Electrolytic
C208	RC-EZ0004AWZZ	J	AD	100 µF,10V,Electrolytic
C212	RC-EZ0004AWZZ	J	AD	100 µF,10V,Electrolytic
C220	VCKYTV1HB102K	J	AA	0.001 µF,50V
C221~223	VCKYTV1HF223Z	J	AA	0.022 µF,50V
C224	VCKYTV1EF104Z	J	AA	0.1 µF,25V
C301	VCKYTV1HB103K	J	AA	0.01 µF,50V
C302~305	VCKYTV1HF223Z	J	AA	0.022 µF,50V
C310	VCKYTV1HF223Z	J	AA	0.022 µF,50V
C312~314	VCKYTV1HF223Z	J	AA	0.022 µF,50V
C451,452	RC-EZ0024AWZZ	J	AD	47 µF,10V,Electrolytic
C453,454	VCKYTV1HB471K	J	AA	470 pF,50V
C455,456	VCKYTV1HB821K	J	AA	820 pF,50V
C457	VCKYTV1HF223Z	J	AA	0.022 µF,50V
C459,460	VCKYTV1HB471K	J	AA	470 pF,50V
C470	VCCCTV1HH101J	J	AA	100 pF (CH),50V
C501	RC-GZV108AF1E	J	AD	1000 µF,25V,Electrolytic
C502	RC-GZ0059AFZZ	J	AF	4700 µF,25V,Electrolytic
C504	RC-GZV227AF1H	J	AC	220 µF,50V,Electrolytic
C505	RC-GZA106AF1H	J	AB	10 µF,50V,Electrolytic
C507	RC-GZA336AF1H	J	AB	33 µF,50V,Electrolytic
C509	RC-GZA476AF1E	J	AB	47 µF,25V,Electrolytic
C510	RC-GZA105AF1H	J	AB	1 µF,50V,Electrolytic
C511	RC-GZA476AF1E	J	AB	47 µF,25V,Electrolytic
C512	RC-GZA105AF1H	J	AB	1 µF,50V,Electrolytic
C513	RC-GZA476AF1E	J	AB	47 µF,25V,Electrolytic
C514,515	RC-GZA106AF1C	J	AB	10 µF,16V,Electrolytic
C516,517	RC-GZA107AF1A	J	AB	100 µF,10V,Electrolytic
C518	RC-GZA106AF1C	J	AB	10 µF,16V,Electrolytic
C519	VCKYTV1HF223Z	J	AA	0.022 µF,50V
C520	VCKYPU1HB102K	J	AA	0.001 µF,50V
C521	RC-GZ0059AFZZ	J	AF	4700 µF,25V,Electrolytic
C522	RC-GZA108AF0J	J	AC	1000 µF,6.3V,Electrolytic
C524	RC-GZA108AF0J	J	AC	1000 µF,6.3V,Electrolytic
C525	RC-GZA107AF1A	J	AB	100 µF,10V,Electrolytic
C530	VCKYTV1HF223Z	J	AA	0.022 µF,50V
C531	VCKYTV1EF104Z	J	AA	0.1 µF,25V
C551,552	VCKZPU1HF103Z	J	AA	0.01 µF,50V
C561	VCKZPU1HF103Z	J	AA	0.01 µF,50V
C601,602	RC-EZ0024AWZZ	J	AD	47 µF,10V,Electrolytic
C603,604	VCKYTV1HB221K	J	AA	220 pF,50V
C607,608	VCKYTV1HB221K	J	AA	220 pF,50V
C611,612	VCCCTV1HH470J	J	AA	47 pF (CH),50V
C613,614	RC-GZA476AF1A	J	AB	47 µF,10V,Electrolytic
C615,616	RC-GZA107AF1A	J	AB	100 µF,10V,Electrolytic
C651,652	VCKYTV1HB151K	J	AC	150 pF,50V
C653,654	VCCCTV1HH270J	J	AA	27 pF (CH),50V
C655,656	RC-GZA106AF1C	J	AB	10 µF,16V,Electrolytic
C657,658	RC-GZA227AF1A	J	AB	220 µF,10V,Electrolytic
C665,666	RC-GZA107AF1A	J	AB	100 µF,10V,Electrolytic
C667	VCKYDA1HA104Z	J		0.1 µF,50V

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
C901	VCKYTV1EF104Z	J	AA	0.1 µF,25V
C902	VCKYTV1HF104Z	J	AA	0.1 µF,50V
C903	VCKYTV1EF104Z	J	AA	0.1 µF,25V
C904	VCCCTV1HH680J	J	AA	68 pF (CH),50V
C905	VCCCTV1HH120J	J	AA	12 pF (CH),50V
C906	VCKYTV1EF104Z	J	AA	0.1 µF,25V
C907~909	VCKYTV1CF105Z	J	AB	1 µF,16V
C910	VCKYTV1EF104Z	J	AA	0.1 µF,25V
C914~917	VCKYTV1HB102K	J	AA	0.001 µF,50V
C920	RC-EZD106AF1C	J	AB	10 µF,16V,Electrolytic
C922,923	VCKYTV1HF103Z	J	AA	0.01 µF,50V
C970	VCKYTV1HB101K	J	AA	100 pF,50V
C971	RC-EZD106AF1C	J	AB	10 µF,16V,Electrolytic
C983	VCKYTV1EF104Z	J	AA	0.1 µF,25V
C1101,1102	VCKYTV0JB105K	J	AD	1 µF,6.3V
C1103	VCKYTV1CF105Z	J	AB	1 µF,16V
C1104	VCKYTV1HB273K	J	AA	0.027 µF,50V
C1105	RC-KZ0002AWZZ	J	AE	10 µF,10V
C1106	VCKYTV1CB474K	J	AC	0.47 µF,16V
C1107	VCKYTV1HB472K	J	AA	0.0047 µF,50V
C1109	VCKYTV0JB105K	J	AD	1 µF,6.3V
C1110	VCKYTV1CB474K	J	AC	0.47 µF,16V
C1112~1116	VCCCCY1HH271J	J	AA	270 pF (CH),50V
C1117	VCKYCY1HB332K	J	AA	0.0033 µF,50V
C1118	VCKYTV1HB333K	J	AA	0.033 µF,50V
C1119	VCCCCY1HH331J	J	AA	330 pF (CH),50V
C1121	VCKYTV1CF105Z	J	AB	1 µF,16V
C1145	VCKYCY1CB333K	J	AA	0.033 µF,16V
C1202,1203	VCKYTV1CF105Z	J	AB	1 µF,16V
C1204,1205	VCCCCY1HH120J	J	AA	12 pF (CH),50V
C1206,1207	VCKYTV1CF105Z	J	AB	1 µF,16V
C1208	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1209~1211	VCKYTV1CF105Z	J	AB	1 µF,16V
C1251	VCKYCY1CB273K	J	AA	0.027 µF,16V
C1252	VCCCTV1HH121J	J	AA	120 pF (CH),50V
C1254	RC-KZ0002AWZZ	J	AE	10 µF,10V
C1255	RC-KZ0003AWZZ	J	AE	4.7 µF,10V
C1401,1402	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1403	VCKYCY1HB681K	J	AA	680 pF,50V
C1405	VCKYCY1EF104Z	J	AA	0.1 µF,25V
C1406	VCKYTV1CF105Z	J	AB	1 µF,16V
C1407	VCKYCY1CB223K	J	AA	0.022 µF,16V
C1412	VCKYCY1HB681K	J	AA	680 pF,50V
C1421~1424	VCKYCY1CB223K	J	AA	0.022 µF,16V
C1425	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1601,1602	VCKYTV1CF105Z	J	AB	1 µF,16V
C1604	VCCCCY1HH560J	J	AA	56 pF (CH),50V
C1605	VCEAPS107AF1A	J	AD	100 µF,10V,Electrolytic
C1609	VCKYTQ1CF105Z	J	AC	1 µF,16V
C1610	RC-KZ0002AWZZ	J	AE	10 µF,10V
C1631	VCKYTV1CF105Z	J	AB	1 µF,16V
C1650~1653	VCCSCY1HL821J	J	AA	820 pF,50V
C1654,1655	VCKYCY1EB153K	J	AA	0.015 µF,25V
C1656,1657	VCKYCY1HB562K	J	AA	0.0056 µF,50V
C1661	VCEAPS107AF1A	J	AD	100 µF,10V,Electrolytic
C1724	VCCCCY1HH220J	J	AA	22 pF (CH),50V
C1801	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1802	VCEAPS107AF1A	J	AD	100 µF,10V,Electrolytic
C1803	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1805	VCKYTV1CF105Z	J	AB	1 µF,16V
C1806	RC-KZ0002AWZZ	J	AE	10 µF,10V
C1807	VCEAPS227AF0G	J	AC	220 µF,4V,Electrolytic
C1913	VCCCCY1HH220J	J	AA	22 pF (CH),50V
C1917	VCCCCY1HH680J	J	AA	68 pF (CH),50V
C1927	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1951	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1952	VCKYCY1CB103K	J	AA	0.01 µF,16V
C1953	VCKYTV1CB474K	J	AC	0.47 µF,16V
C1954	VCCCCY1HH150J	J	AA	15 pF (CH),50V
C1955	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1956	VCEAPS476AF0J	J	AC	47 µF,6.3V,Electrolytic
C1957	VCEAPS107AF0J	J	AC	100 µF,6.3V,Electrolytic
C1958	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1964	VCKYCY1HB102K	J	AA	1000 pF,50V
C1990	VCKYTV0JB105K	J	AD	1 µF,6.3V
C1991	RC-KZ0002AWZZ	J	AE	10 µF,10V
C1992	VCKYCY1EF104Z	J	AA	0.1 µF,25V
JC171	VCCCTV1HH220J	J	AA	22 pF (CH),50V
JC196	VCCCTV1HH220J	J	AA	22 pF (CH),50V

RESISTORS

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
	VRS-CY1JB000J	J	AA	0 ohm,Jumper,0.8×1.55mm, Green
	VRS-TQ2BB000J	J	AA	0 ohm,Jumper,1.55×3.1mm, Green
	VRS-TV2AB000J	J	AA	0 ohm,Jumper,1.25×2mm,Green
J1405	VRS-CY1JB103J	J	AA	10 kohm,1/16W
LR190	VRS-TV2AB220J	J	AA	22 ohms,1/10W
R103,104	VRS-TV2AB102J	J	AA	1 kohm,1/10W
R105,106	VRS-TV2AB473J	J	AA	47 kohms,1/10W
R107,108	VRS-TV2AB104J	J	AA	100 kohm,1/10W
R109,110	VRS-TV2AB102J	J	AA	1 kohm,1/10W
R111,112	VRS-TV2AB152J	J	AA	1.5 kohms,1/10W
R113,114	VRS-TV2AB102J	J	AA	1 kohm,1/10W
R115,116	VRD-ST2CD101J	J	AA	100 ohm,1/6W
R202	VRS-TV2AB684J	J	AA	680 kohms,1/10W
R203	VRS-TV2AB105J	J	AA	1 Mohm,1/10W
R301	VRD-ST2CD820J	J	AA	82 ohms,1/6W
R302	VRS-TV2AB331J	J	AA	330 ohms,1/10W
R303	VRS-TV2AB224J	J	AA	220 kohms,1/10W
R304	VRS-TV2AB272J	J	AA	2.7 kohms,1/10W
R305	VRS-TV2AB563J	J	AA	56 kohms,1/10W
R307,308	VRS-TV2AB220J	J	AA	22 ohms,1/10W
R309	VRS-TV2AB103J	J	AA	10 kohm,1/10W
R310	VRS-TV2AB332J	J	AA	3.3 kohms,1/10W
R312	VRD-ST2CD823J	J	AA	82 kohms,1/6W
R313	VRD-ST2CD473J	J	AA	47 kohms,1/6W
R401~404	VRS-TV2AB561J	J	AA	560 ohms,1/10W
R405	VRD-ST2CD331J	J	AA	330 ohms,1/6W
R406~410	VRS-TV2AB224J	J	AA	220 kohms,1/10W
R411,412	VRD-ST2CD472J	J	AA	4.7 kohms,1/6W
R413	VRS-TQ2BB472J	J	AA	4.7 kohms,1/8W
R414	VRS-TQ2BB822J	J	AA	8.2 kohms,1/8W
R415,416	VRS-TV2AB822J	J	AA	8.2 kohms,1/10W
R417,418	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R451,452	VRS-TV2AB331J	J	AA	330 ohms,1/10W
R453,454	VRS-TV2AB333J	J	AA	33 kohms,1/10W
R455,456	VRS-TV2AB101J	J	AA	100 ohm,1/10W
R457,458	VRS-TV2AB103J	J	AA	10 kohm,1/10W
⚠ R501,502	RH-QX1067AFZZ	J	AE	Posistor,8.2 ohms
R503	VRD-ST2CD182J	J	AA	1.8 kohms,1/6W
R504	VRS-TV2AB333J	J	AA	33 kohms,1/10W
R505	VRD-ST2CD681J	J	AA	680 ohms,1/6W
R506	VRD-ST2CD101J	J	AA	100 ohm,1/6W
R507	VRD-ST2CD681J	J	AA	680 ohms,1/6W
R508	VRD-ST2CD101J	J	AA	100 ohm,1/6W
R509	VRD-ST2CD821J	J	AA	820 ohms,1/6W
R510	VRD-ST2CD101J	J	AA	100 ohm,1/6W
⚠ R511	RH-QX1066AFZZ	J	AE	Posistor,0.8 ohms
R512	VRD-ST2CD471J	J	AA	470 ohms,1/6W
R514	VRS-TV2AB104J	J	AA	100 kohm,1/10W
R516	VRS-TV2AB224J	J	AA	220 kohms,1/10W
R517,518	VRD-ST2EE221J	J	AA	220 ohms,1/4W
⚠ R551	RH-QX1067AFZZ	J	AE	Posistor,8.2 ohms
R552	VRD-ST2CD393J	J	AA	39 kohms,1/6W
R553	VRD-ST2CD683J	J	AA	68 kohms,1/6W
R554	VRS-TV2AB683J	J	AA	68 kohms,1/10W
R601,602	VRS-TV2AB471J	J	AA	470 ohms,1/10W
R605,606	VRS-TV2AB223J	J	AA	22 kohms,1/10W
R607~610	VRS-TV2AB102J	J	AA	1 kohm,1/10W
R611,612	VRS-TV2AB152J	J	AA	1.5 kohms,1/10W
R613,614	VRD-ST2CD101J	J	AA	100 ohm,1/6W
R615,616	VRS-TV2AB473J	J	AA	47 kohms,1/10W
R617,618	VRS-TV2AB331J	J	AA	330 ohms,1/10W
R619,620	VRS-TV2AB103J	J	AA	10 kohm,1/10W
R651,652	VRS-TV2AB104J	J	AA	100 kohm,1/10W
R653,654	VRS-TV2AB102J	J	AA	1 kohm,1/10W
R659,660	VRD-ST2CD100J	J	AA	10 ohm,1/6W
R667,668	VRD-ST2CD820J	J	AA	82 ohms,1/6W
R669	VRS-TQ2BB272J	J	AA	2.7 kohms,1/8W
R670	VRS-TV2AB331J	J	AA	330 ohms,1/10W
R681,682	VRS-TV2AB102J	J	AA	1 kohm,1/10W
R901	VRS-TV2AB103J	J	AA	10 kohm,1/10W
R903	VRS-TV2AB123J	J	AA	12 kohms,1/10W
R904	VRS-TV2AB682J	J	AA	6.8 kohms,1/10W
R905	VRS-TV2AB123J	J	AA	12 kohms,1/10W
R906	VRS-TV2AB224J	J	AA	220 kohms,1/10W
R909	VRS-TV2AB182J	J	AA	1.8 kohms,1/10W
R910	VRS-TV2AB475J	J	AA	4.7 Mohms,10W
R911	VRS-TV2AB105J	J	AA	1 Mohm,1/10W
R920	VRS-TV2AB474J	J	AA	470 kohms,1/10W

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
R921~924	VRS-TV2AB103J	J	AA	10 kohm,1/10W
R930~945	VRS-TV2AB473J	J	AA	47 kohms,1/10W
R950	VRS-TV2AB102J	J	AA	1 kohm,1/10W
R951	VRS-TV2AB122J	J	AA	1.2 kohms,1/10W
R952	VRS-TV2AB152J	J	AA	1.5 kohms,1/10W
R953	VRS-TV2AB182J	J	AA	1.8 kohms,1/10W
R954	VRS-TV2AB102J	J	AA	1 kohm,1/10W
R955	VRS-TV2AB122J	J	AA	1.2 kohms,1/10W
R956	VRS-TV2AB152J	J	AA	1.5 kohms,1/10W
R957	VRS-TV2AB182J	J	AA	1.8 kohms,1/10W
R958	VRS-TV2AB272J	J	AA	2.7 kohms,1/10W
R959	VRS-TV2AB392J	J	AA	3.9 kohms,1/10W
R968,969	VRS-TV2AB103J	J	AA	10 kohm,1/10W
R970	VRS-TV2AB102J	J	AA	1 kohm,1/10W
R971	VRS-TV2AB101J	J	AA	100 ohm,1/10W
R972	VRS-TV2AB474J	J	AA	470 kohms,1/10W
R1100	VRS-TQ2BB270J	J	AA	27 ohms,1/8W
R1102	VRS-CY1JB561J	J	AA	560 ohms,1/16W
R1105	VRS-CY1JB394J	J	AA	390 kohms,1/16W
R1107	VRS-CY1JB1R0J	J	AA	1 ohm,1/16W
R1150~1154	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R1155	VRS-CY1JB563J	J	AA	56 kohms,1/16W
R1166	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R1201	VRS-CY1JB151J	J	AA	150 ohms,1/16W
R1202	VRS-CY1JB105J	J	AA	1 Mohm,1/16W
R1210	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R1211	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1221	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1223	VRS-TV2AB681J	J	AA	680 ohms,1/10W
R1251	VRS-CY1JB100J	J	AA	10 ohm,1/16W
R1254	VRS-TV2AB221J	J	AA	220 ohms,1/10W
R1281	VRS-CY1JB470J	J	AA	47 ohms,1/16W
R1401	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1404	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1406,1407	VRS-CY1JB332J	J	AA	3.3 kohms,1/16W
R1408	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R1409	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1412	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R1413	VRS-CY1JB332J	J	AA	3.3 kohms,1/16W
R1414	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1415	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1416	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1418	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R1420	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1422~1424	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1425	VRS-CY1JB272J	J	AA	2.7 kohms,1/16W
R1426	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1427	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R1428	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1429,1430	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1452	VRS-CY1JB332J	J	AA	3.3 kohms,1/16W
R1454	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1456	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1458	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1460	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1462	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1464	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1466	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1472	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R1473	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R1474~1476	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1477	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1609	VRS-CY1JB152J	J	AA	1.5 kohms,1/16W
R1610	VRS-CY1JB303D	J	AA	30 kohms,1/16W
R1611	VRS-CY1JB123D	J	AA	12 kohms,1/16W
R1612	VRS-CY1JB563J	J	AA	56 kohms,1/16W
R1613	VRS-CY1JB273J	J	AA	27 kohms,1/16W
R1614	VRS-CY1JB183D	J	AA	18 kohms,1/16W
R1617	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R1650	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1651	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R1652	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1653	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R1654	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1655	VRS-CY1JB124J	J	AA	120 kohms,1/16W
R1656	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1657	VRS-CY1JB124J	J	AA	120 kohms,1/16W
R1658	VRS-CY1JB153J	J	AA	15 kohms,1/16W
R1659	VRS-CY1JB823J	J	AA	82 kohms,1/16W
R1660	VRS-CY1JB153J	J	AA	15 kohms,1/16W
R1661	VRS-CY1JB823J	J	AA	82 kohms,1/16W
R1662	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1663	VRS-CY1JB623J	J	AA	62 kohms,1/16W
R1664	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1665	VRS-CY1JB623J	J	AA	62 kohms,1/16W
R1666,1667	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R1668,1669	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1708	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1733	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1758,1759	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1801	VRS-CY1JB182J	J	AA	1.8 kohms,1/16W
R1802	VRS-CY1JB271J	J	AA	270 ohms,1/16W
R1804	VRS-CY1JB224D	J	AA	220 kohms,1/16W
R1805	VRS-CY1JB104D	J	AA	100 kohm,1/16W
R1808	VRS-CY1JB273J	J	AA	27 kohms,1/16W
R1809	VRS-CY1JB391J	J	AA	390 ohms,1/16W
R1820,1821	VRS-TV2AB1R0J	J	AA	1 ohm,1/10W
R1827	VRS-CY1JB271J	J	AA	270 ohms,1/16W
R1901	VRS-TV2AB471J	J	AA	470 ohms,1/10W
R1902	VRS-TV2AB182J	J	AA	1.8 kohms,1/10W
R1903,1904	VRS-TV2AB821J	J	AA	820 ohms,1/10W
R1927	VRS-TV2AB220J	J	AA	22 ohms,1/10W
R1939	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1940	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1947	VRS-TV2AB470J	J	AA	47 ohms,1/10W
R1952,1953	VRS-CY1JB470J	J	AA	47 ohms,1/16W
R1961	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R1962	VRS-CY1JB224J	J	AA	220 kohms,1/16W
R1963	VRS-CY1JB152J	J	AA	1.5 kohms,1/16W
R1964	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1967	VRS-CY1JB470J	J	AA	47 ohms,1/16W
R1968	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1969	VRS-TQ2BB560J	J	AA	56 ohms,1/8W
R1973	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1974	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1994	VRS-CY1JB470J	J	AA	47 ohms,1/16W
RA931	VRS-TV2AB102J	J	AA	1 kohm,1/10W

OTHER CIRCUITRY PARTS

BI301/CNS301	QCNWN1275AWZZ	J		Connector Ass'y,4/4Pin
CN1101	QCNCWY028AFZZ	J	AE	Plug,23Pin
CN1252	QCNCM891BAFZZ	J	AC	Plug,2Pin
CN1601	QCNCWXC05AFZZ	J	AC	Plug,5Pin
CN1602	QCNCM890BAF02	J	AD	Plug,2Pin
CN1603	QCNCM890BAFZZ	J	AC	Plug,2Pin
CN1604	QCNCM890BAF06	J	AD	Plug,2Pin
CN1901	QCNCW037EAWZZ	J	AH	Socket,5Pin
CN1902	QCNCWZC24AWZZ	J	AH	Socket,24Pin
CN1904	QCNCM891DAFZZ	J	AD	Plug,4Pin
CNP471	QCNCWYZ24AWZZ	J	AE	Plug,24Pin
CNP472	QCNCWZM24AWZZ	J	AH	Socket,24Pin
CNP473	92LCONPB6BPHK	J	AB	Plug,6Pin
CNP474	92LCONPB3BPHK	J	AB	Plug,3Pin
CNP902	QCNCWZM24AWZZ	J	AH	Socket,24Pin
CNS901	QCNWN1278AWZZ	J	AF	Connector Ass'y,3Pin
CNS903	QCNWN1279AWZZ	J	AG	Connector Ass'y,6Pin
CNS1252	QCNWN1044AWZZ	J	AG	Connector Ass'y,2Pin
CNW471	QCNWN1276AWZZ	J	AG	Flexible Cable,24Pin
CNW472	QCNWN1277AWZZ	J	AM	Flexible Cable,24Pin
CNW982	QCNWN1306AWZZ	J	AB	Pin Header
CW1901	QCNWN1042AWZZ	J	AD	Flat Cable,5Pin
CW1903	QCNWN1044AWZZ	J	AG	Connector Ass'y,2Pin
⚠ F551,552	92LFUSET102E	J	AD	Fuse,T1A L 250V
FL901	VVK15BT37G/-1	J	BD	FL Display
J101	92LJACKL1779A	J	AG	Jack,AUX/LINE OUT
J301	QJAKZ0011AWZZ	J	AE	Jack,Digital 2 Coaxial
J981	92LJACKH1759A	J	AF	Jack,Headphones
M901	RMOTV0012AWZZ	J	AV	MD Spindle Motor Ass'y
M902	RMOTV0013AWM1	J	AQ	MD Sled Motor Ass'y
M903	RMOTV0014AWM1	J	AQ	MD Loading Motor Ass'y
RX302	VHPGP1F32R/-1	J	AP	Optical Fiber Data Link, GP1F32R
SW501	92LSWICH-1385A	J	AC	Switch,Key Type [Reset]
SW901	QSW-Z0001AWZZ	J	AN	Switch,Push Type [Jog]
SW950	QSW-K0006AWZZ	J	AC	Switch,Key Type [POWER]
SW951	QSW-K0006AWZZ	J	AC	Switch,Key Type [PLAY/PAUSE]
SW952	QSW-K0006AWZZ	J	AC	Switch,Key Type [STOP]
SW953	QSW-K0006AWZZ	J	AC	Switch,Key Type [REC]
SW954	QSW-K0006AWZZ	J	AC	Switch,Key Type [TRACKING UP/CUE]
SW955	QSW-K0006AWZZ	J	AC	Switch,Key Type [EJECT]
SW956	QSW-K0006AWZZ	J	AC	Switch,Key Type [ENTER]

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
SW957	QSW-K0006AWZZ	J	AC	Switch,Key Type [NAME•TOC EDIT]
SW958	QSW-K0006AWZZ	J	AC	Switch,Key Type [TIMER/DELETE]
SW959	QSW-K0006AWZZ	J	AC	Switch,Key Type [DISPLAY/CHARACTER]
SW960	QSW-K0006AWZZ	J	AC	Switch,Key Type [TRACKING DOWN/REVIEW]
SW961	QSW-K0006AWZZ	J	AC	Switch,Key Type [INPUT SELECT]
SW1952	QSW-P0006AWZZ	J	AG	Switch,Push Type [Direct]
SW1953	QSW-M0157AFZZ	J	AD	Switch,Slide Type [Lead In]
SW1954	QSW-M0002AWZZ	J	AD	Switch,Push [Play]
SW1955	QSW-M0002AWZZ	J	AD	Switch,Push Type [Rec.]
SW1956	QSW-M0156AFZZ	J	AC	Switch,Leaf Type [Loading]
TX302	VHPGP1F32T/-1	J	AP	Optical Fiber Data Link, GP1F32T
UN970	VHLN63H380A-1	J	AK	Remote Sensor,N63H380A

MECHANICAL PARTS

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
1	LANGF0033AWZZ	J	AD	Bracket,MD Guide (A)
2	LANGF0034AWZZ	J	AD	Bracket,MD Guide (B)
4	LCHSM0060AWM1	J	AP	Chassis,Drive
5	LHLDX3001AWM1	J	AP	Holder,Cartridge Ass'y
6	MLEVF0024AWM1	J	AF	Lever,Cam Plate Ass'y
7	MLEVF0025AWZZ	J	AD	Lever,H/A Shift
8	MLEVF0026AWZZ	J	AF	Lever,Holder Arm
9	MLEVF0029AWM1	J	AL	Lever,Roller Arm Sub Ass'y
10	MLEVP0075AWZZ	J	AD	Lever,Clamp
11	MLEVP0076AWZZ	J	AC	Lever,Catch
12	MLEVP0077AWZZ	J	AC	Lever,Slider
13	MSPRD0103AWFJ	J	AB	Spring,Roller Holder
14	MSPRD0105AWFJ	J	AB	Spring,Spindle
15	MSPRD1318AFFJ	J	AB	Spring,Shift Arm
16	MSPRD1319AFFJ	J	AB	Spring,Holder Arm
17	MSPRT0018AWFJ	J	AB	Spring,Lack
18	MSPRD1334AFFJ	J	AC	Spring,Catch
19	MSPRP0015AWFJ	J	AB	Spring,Plate (A)
20	MSPRP0017AWFJ	J	AB	Spring,Drive Shaft
21	MSPRT1566AFFJ	J	AB	Spring,Roller Arm
22	NGERH0066AWZZ	J	AC	Gear,Loading (B)
23	NGERH0067AWZZ	J	AC	Gear,Drive
24	NGERH0068AWZZ	J	AC	Gear,Loading (A)
25	NGERH0069AWZZ	J	AC	Gear,Roller
26	NGERR0002AWZZ	J	AC	Gear,Rack
29	NROLP0010AWZZ	J	AC	Holder,Roller
30	NROLR0001AWZZ	J	AC	Transfer Roller
31	NSFTD0005AWFT	J	AF	Shaft,Drive
32	NSFTM0017AWFW	J	AC	Shaft,Loading Gear
33	NSFTM0277AFFW	J	AC	Shaft,Pickup Slide
34	NSFTM0278AFFW	J	AC	Shaft,Pickup Guide
40	RCILH0108AFZZ	J	AP	Magnetic Head
⚠ 41	RCTRH8173AF10	J		Pickup Unit
45	PSHEP0024AWZZ	J	AC	Sheet,Head
601	LX-BZ0030AWZZ	J	AB	Screw,ø1.7×9.5mm
602	LX-BZ0031AWZZ	J	AB	Screw,ø1.7×7.5mm
603	LX-BZ0032AWZZ	J	AB	Screw,ø1.7×2mm
604	LX-BZ0804AFFF	J	AA	Screw,ø1.4×2.2mm
605	LX-BZ0846AFZZ	J	AB	Screw,ø1.7×3mm
606	LX-BZ0851AFZZ	J	AB	Screw,ø1.7×2.5mm
608	LX-BZ0883AFZZ	J	AB	Screw,ø1.7×5mm
609	LX-WZ9268AFZZ	J	AA	Washer,ø1.5×ø3.2×0.5mm
610	LX-WZ9269AFZZ	J	AA	Washer,ø1.2×ø3×0.25mm
615	LX-BZ0852AFFD	J	AC	Screw,ø1.7×8.9mm
616	XBPSD20P04K00	J	AA	Screw,ø2×4mm with Washer
617	XSPSN17P03K00	J	AB	Screw,ø1.7×3mm
M901	RMOTV0012AWZZ	J	AV	MD Spindle Motor Ass'y
M902	RMOTV0013AWM1	J	AQ	MD Sled Motor Ass'y
M903	RMOTV0014AWM1	J	AQ	MD Loading Motor Ass'y
SW1952	QSW-P0006AWZZ	J	AG	Switch,Push Type [Direct]
SW1953	QSW-M0157AFZZ	J	AD	Switch,Push Type [Lead In]
SW1954	QSW-M0002AWZZ	J	AD	Switch,Push Type [Play]
SW1955	QSW-M0002AWZZ	J	AD	Switch,Push Type [Rec]
SW1956	QSW-M0001AWZZ	J	AD	Switch,Push Type [Loading]

CABINET PARTS

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
201	HPNLC1173AWSA	J	AV	Front Panel
202	GDORF0013AWSA	J	AH	MD Door
203	LHLDZ1089AW00	J	AD	Holder,MD Door
204	MSPRD0027AWZZ	J	AB	Spring,MD Door
205	JKNBZ0164AWSB	J	AG	Knob,Power
206	JKNBZ0531AWSA	J	AG	Knob,MD Control
207	LHLDZ1168AWZZ1	J	AE	FL Holder
208	PRDAR0041AWFW	J	AG	Heat Sink
209	LCHSM0027AWFW2	J		Main Chassis
⚠ 210	QACCB0003AW00	J	BA	AC Power Supply Cord [For UK]
⚠ 210	QACCE0008AW00	J	AG	AC Power Supply Cord [Except for UK]
211	LBSHC0002AWZZ	J	AD	Bushing,AC Power Supply Cord
212	GITAR0331AWSA	J	AR	Rear Panel [Except for UK]
212	GITAR0341AWSA	J	AR	Rear Panel [For UK]
213	GCAB-3040AWSD	J		Top Cabinet
214	92LCUSN1585A	J	AA	Leg,Cushion
215	92LN-BAND1318A	J	AA	Nylon Band,80mm
216	LHLDF1008AWFW	J		Holder,PWB
217	GLEGP0002AWSC	J	AD	Insulator
218	JKNBK0028AWSA	J	AC	Knob,Rec Volume
219	JKNBK0027AWSA	J	AC	Knob,Jog Volume
220	92LFSHOLD1652T	J	AB	Holder,Fuse
221	92LLUG1746A	J	AA	Lug,Terminal
222	HDECQ0354AWSA	J	AP	FL Panel
223	92LBADGE1692A	J	AC	Badge,SHARP
224	PCUSG0016AW00	J	AB	Cushion,Front Insulator
225	LANGF0131AWFW	J		Bracket,MD Support
226	JKNBK0048AWSD	J	AD	Knob,Phones
227	PGIDI0001AWZZ	J	AC	Guide,Jog Knob
228	LANGF0016AWFW	J	AG	Bracket,Reinforcement
229	TCAUS0028AWZZ	J	AB	Caution Label,Class 3B
230	LANGK0092AWFW	J	AM	Frame
231	PCUSG0531AFSA	J	AD	Cushion (A)
232	PCUSG0531AFSB	J	AD	Cushion (B)
233	PCUSS0041AWZZ	J	AC	Cushion,Head
234	QCNWN6715AFM1	J	AM	MD Flat Cable,24Pin
235	PSHEP0026AWZZ	J	AC	Sheet,Head Lead Wire
236	LANGZ0020AWFW	J	AM	Bracket,Protect
601	XEBSD26P10000	J	AA	Screw,ø2.6×10mm
602	XEBSD30P10000	J	AA	Screw,ø3×10mm
603	XWHFZ32-05070	J	AA	Washer,ø3.2×ø7×0.5mm
604	XJBSF30P10000	J	AA	Screw,ø3×10mm
605	XJBSD30P10000	J	AA	Screw,ø3×10mm
606	XJBSD30P06000	J	AA	Screw,ø3×6mm
607	XEBSF26P10000	J	AA	Screw,ø2.6×10mm
608	XHBSD40P08000	J	AA	Screw,ø4×8mm
609	XWSSD40-11000	J	AA	Washer,ø4mm
610	XEBSD30P12000	J	AA	Screw,ø3×12mm
611	XJBSF30P08000	J	AA	Screw,ø3×8mm
612	XJSSD30P10000	J	AA	Screw,ø3×10mm
613	LX-JZ0010AFFD	J	AA	Screw,ø3×10mm
614	XJBSD30P08000	J	AA	Screw,ø3×8mm

ACCESSORIES/PACKING PARTS

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
1	QCNWG0003AWZZ	J	AN	Analog Connecting Cable×2
2	RRMCG0153AWSA	J	AY	Remote Control
2- 1	92LLID1782A	J	AQ	Battery Lid,Remote Control
3	SPAKA0194AWZZ	J	AH	Packing Add.,Left/Right
4	SPAKC0652AWZZ	J		Packing Case [Except for UK]
4	SPAKC0653AWZZ	J	AQ	Packing Case [For UK]
5	SPAKZ0380AWZZ	J	AF	Pad,AC Power Supply Cord [For UK Only]
6	SSAKH0013AWZZ	J	AE	Polyethylene Bag,Unit
7	SSAKH0025AWZZ	J	AC	Polyethylene Bag,Accessories
8	TGAN-3170UMZZ	J	AE	Warranty Card
9	TINSE0211AWZZ	J	AG	Operation Manual [For UK]
9	TINSZ0308AWZZ	J	AV	Operation Manual [Except for UK]
10	TLABE0241AWZZ	J	AB	Label,Bar Cord
11	92LBAG667B	J	AC	Polyethylene Bag,Pin Cord
12	TLABM0065AWZZ	J	AE	Feature Label

P.W.B. ASSEMBLY (Not Replacement Item)

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
PWB-A1~3	92LPWB2861MANS	J	—	Main/Display/Headphones (Combined Ass'y) [UK Only]
PWB-B	92LPWB2604MDSS	J	—	MD Main [UK Only]
PWB-C	QPWBF0400AWZZ	J	AC	MD Mechanism Switch (PWB Only) [UK Only]

OTHER SERVICE PARTS

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
	QCNWK0043AFZZ	J	AG	Extension Cable, TP751 (6Pin)
	QCNWK0059AFZZ	J	AF	Extension Cable (2Pin)

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
	QCNWK0107AFZZ	J	AH	Extension Cable (6Pin)
	QCNWK0108AFZZ	J	AL	Extension Flat Cable (28Pin)
	QCNWK0109AFZZ	J	AH	Extension Flat Cable (5Pin)
	RRCDT0101AFZZ	J	CB	Test Disc,High Reflection
	RRCDT0103AFZZ	J	BK	Head Adjusting Transparend Disc
	RUNTK0457AFZZ	J	BE	Extension PWB
	UDSKM0001AFZZ	J	AZ	Recording Mini Disc
	88GMMD-318	J	BF	Low Reflection Disc, Pre-Adjustment Mini Disc (TEAC Test MD)

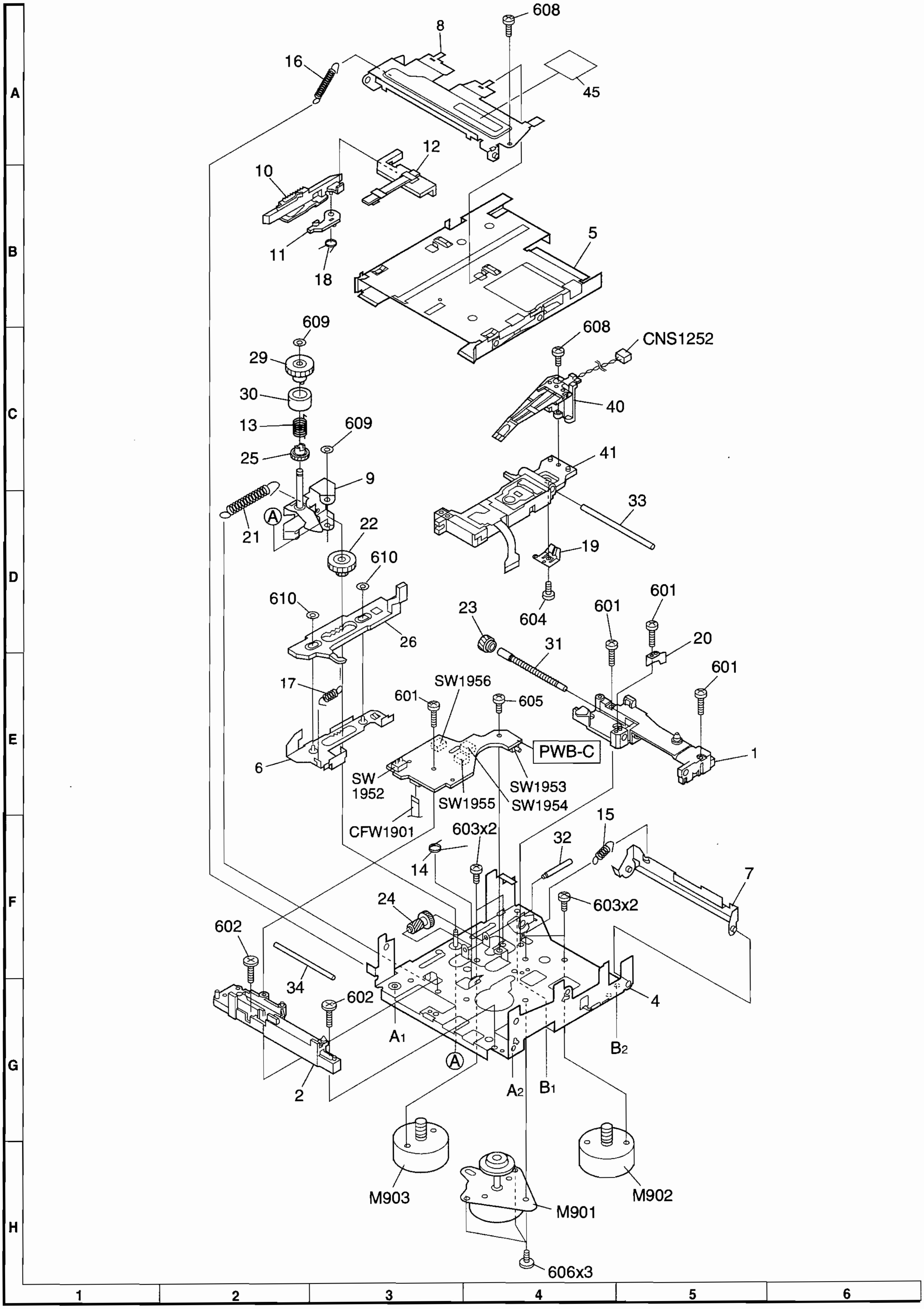

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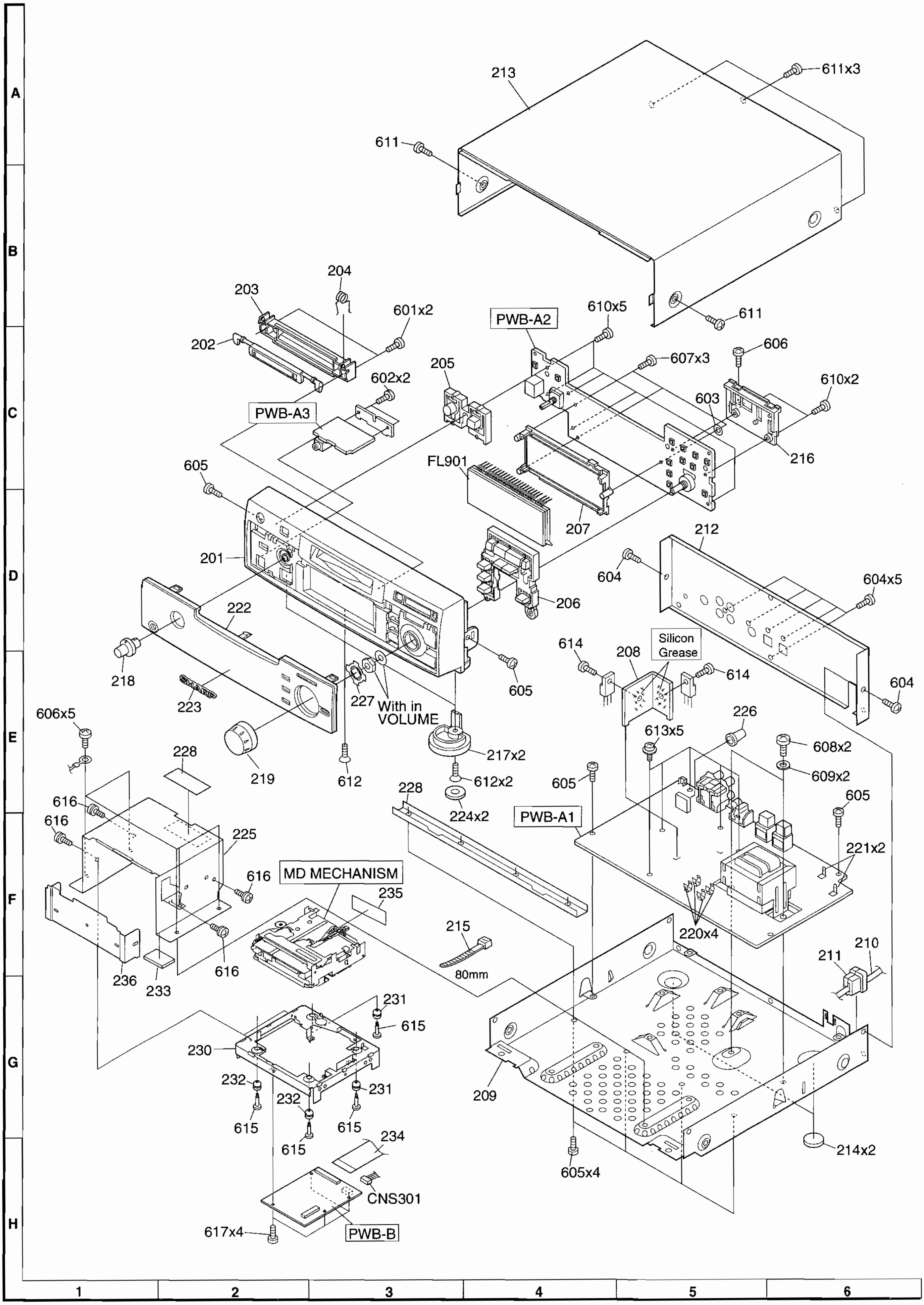
Figure 6 MD MECHANISM EXPLODED VIEW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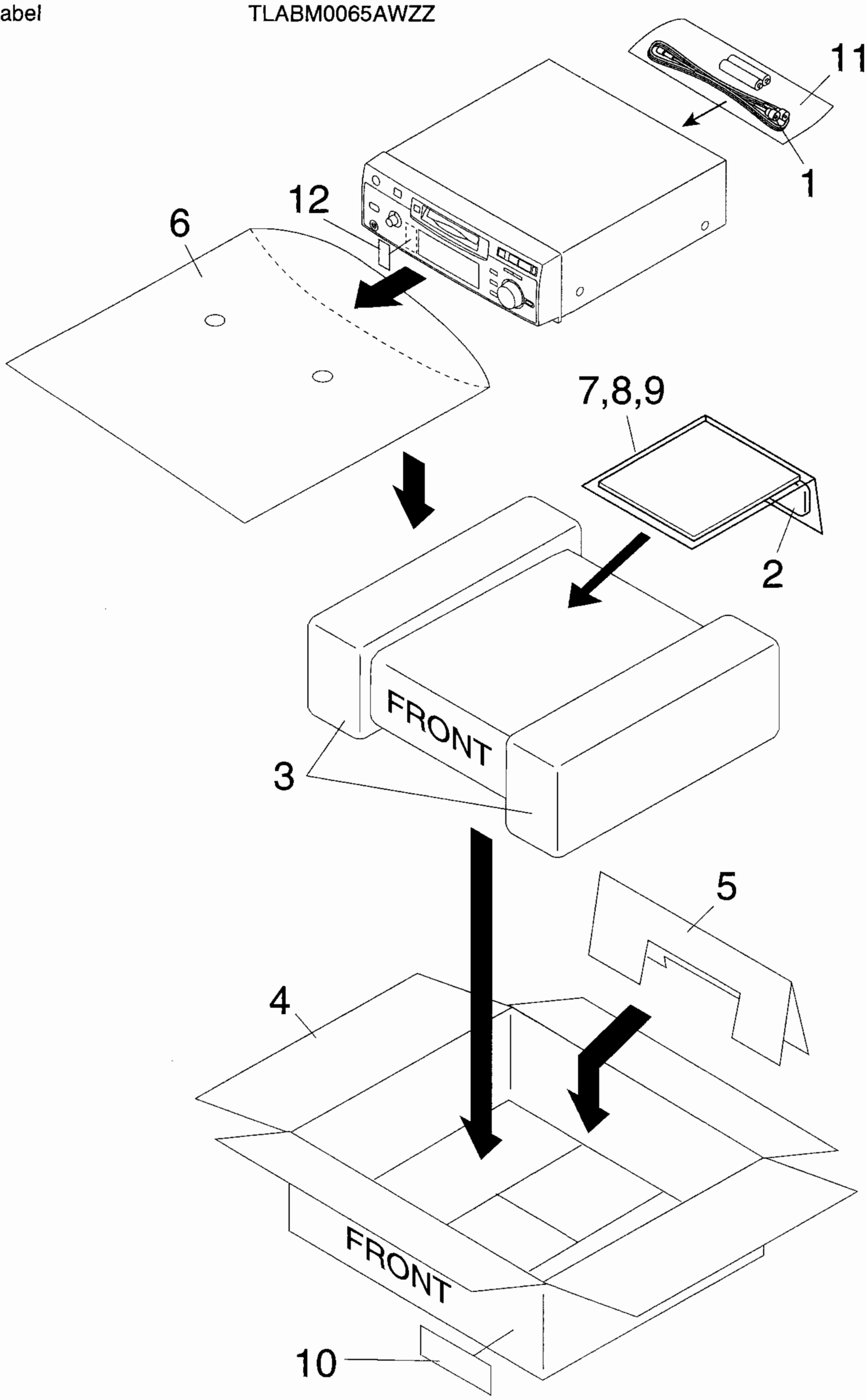
605x4
214x2
CNS301
617x4
PWB-B

Figure 7 CABINET EXPLODED VIEW

PACKING OF METHOD (FOR UK ONLY)

1. Analog Connecting cable x 2	QCNWG0003AWZZ
2. Remote Control	RRMCG0153AWSA
3. Packing add.,Left/Right	SPAKA0194AWZZ
4. Packing Case	SPAKC0653AWZZ
5. Pad, AC Power Supply Cord	SPAKZ0380AWZZ
6. Polyethylene Bag, Unit	SSAKH0013AWZZ
7. Polyethylene Bag, Accessories	SSAKH0025AWZZ
8. Warranty Card	TGAN-3170UMZZ
9. Operation Manual	TiNSE0211AWZZ
10. Label, Bar Cord	TLABE0241AWZZ
11. Polyethylene Bag, Pin Cord	92LBAG667B
12. Feature Label	TLABM0065AWZZ



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